logical father, as well as his mother's husband, should do something nice for him. 159
Perhaps when he receives his first assegai his begetter will give it, for that is a very 848
proud thing—but we do not know what the future holds for these people or where
they will be by then.

The dominance of men

Wives are much desired by the young men, who usually wait for years for their 562
infant fiancées to grow up, and by men who want second wives, and by widowers. [581]
/Kung women are not only precious as mates, they are the food-gatherers and supply
more of the daily food than the men do. Hunting[1] is very arduous in the Kalahari and [222]
the hunters succeed in bringing a big meat animal to the werf only about once or [462]
twice a month. Meanwhile women have dug roots and gathered berries and the other [224]
wild plant foods to feed their families every day. /Kung women in their two roles
make a very great contribution.

In /Kung society, however, the magnitude of their contribution does not make women dominant. There are factors which bring the men forward clearly into dominance and leadership.

The primary factor is undoubtedly strength. /Kung men are small and slender, [142]
but they are wiry and vigorous. With their strength they carry and protect the very 147
life of their people. When they swing their weapons and implements and their
small children on to their shoulders and stride out in front of the women, the image
seems to reveal, as vividly as if a great artist had painted it, how the laden following
women are borne up by the strength of their men and take heart from them.

Another factor which brings men clearly forward is the character of hunting and 462
its reward. Women bring the daily food, but there is only drudgery in digging and 562
picking in the hot sun and trudging back in the early evening to the werf with heavy
roots and berries and babies all sagging in the pouches of their karosses, a small dead [222]
tree or two on one shoulder for the night fire, possibly another child astride the other
shoulder. Many of the vegetable foods, furthermore, are rather tasteless and harsh
and are not very satisfying. There is nothing splendid about returning with vege- [262] ●
tables and wood. The return of the hunters is vastly different. The intense craving
for meat, the anxiety that goes with the hunt, the deep excitement of the kill, finally [262]
the eating and the satisfaction reach to the very core of the people, engaging power- [224]
ful emotions. Once, when an eland had been killed and the hunters were sighted
with the meat on their backs, moving in a dark, lumpy, bobbing line in the golden [152]
grass, we heard the sound of voices in the werf rising in volume and pitch like the
hum of excited bees. Some people ran toward the hunters, others crowded together at
the edge of the werf, some danced up and down, the children squealed and ran about,
the boys grappled and tussled together. The motion and sound had the effect of
a vibration. Another time a young man who was said to be the best hunter in
the region (/Qui Hunter we called him, his people called him Short /Qui), had been 462
charged by a magnificent cock ostrich on a big open pan where there was no refuge. 562
He knelt facing the creature till it was within close range and shot an arrow straight 224

---

[1] John Marshall has described /Kung hunting in his film, *The Hunters*, Peabody Museum Film Study Center, Harvard University, and in 'Man as Hunter', *Natural History*, the magazine of the American Museum of Natural History, New York, vol. lxvii, No. 6, June, and No. 7, August, 1958. [113]

/139 cont./

412 322 Mortars are made of wood and have a stone floor. Their construction is extremely laborious. A block of wood is buried in the ground, stamped down, and then hollowed out with the iron point of the lance or a knife. For this purpose, the iron is sometimes heated. Fire is not used. The wooden pestle is furnished with a stone at one end. The stone on the floor of the [381] mortar is cemented with tree resin.

[373] Burning branches are used as a kind of torch, but only briefly in the vicinity of the fire.

Photograph 18 illustrates the shape of the mortar and the pestle. The mortar is made of soft wood hollowed out with a lance point. Fire is not used to hollow it out (see above).

Household utensils. Two flat stones to pound hard veld 415 fruit. Spoons crudely carved out of wood. Wooden pot or empty [531] [412] ostrich eggs /140/ with a round hole as water containers. Frequently some kind of decoration is applied. Digging stick pointed at one end.

301 531 Ornamentation. Unfortunately I did not have time to obtain more precise data concerning ornamentation. Ornaments are attached to many objects and consist of such things as ostrich eggs and pipe plugs (which are worn on a string around the neck).

264 Generally speaking, the Auin has three meals a day (morning, afternoon, and evening). If he has enough food, however, he may eat all day long, with the necessary intervals, and, if it is not too cold, even during the night.

There is no special menu. Whatever is available is eaten.

● 262 The hyena is not eaten because it "devours corpses." The leopard is supposedly not eaten by all the people. The reason for this is unknown to me. The shabrack jackal is frequently spurned because it "is a dog." On the other hand, they like to eat the silver jackal, because it "does not eat vermin."

[858] [882] Young girls who have not yet menstruated and boys before they have reached adulthood may not eat game meat because if they did, they would "remain skinny."

266 I have never observed any traces of cannibalism. Furthermore, I was told by old, experienced natives of other races (Klipp Kaffir) that they had never heard of Bushmen eating human flesh.

WESTERN OTJIMPOLO VELD

[6 cont.]

101 account refers only to the latter.

821 [7] The sky is designated by them as !nanu áiba Éroba Kharésa ("rain house of god").

776 For god they have the expressions "Erob" and "X'amab;"
775 only "Erob" is used in prayers. X'amab (1) has been preserved in X'amá //gu Khe = "people who are with god, " in other words, the souls of the deceased in heaven. Everyone goes there, the good as well as the bad. Erob has no wife and no children. A human being has only one soul (!gau-ba). This soul goes to the heavenly house and remains there "until Erob makes new people from it." Here is a belief in the transmigration of souls, which, it must be admitted, is not thought through any further.

No spirits of the dead remain on earth. There are little
776 bush spirits, the gangorob; they are harmless and do nothing. There are no evil little spirits. They supposedly know nothing about Heiseb and /Nawa.

136 The supply of game is ample in the tall dry forests of the Otjimpolo Veld. There are also fish in the rainy season. The
[825] Bushmen call them "shiba" (Ovambo: oshi or ochi); in other words, originally they had no word for them.

224 The Bushmen are helpless against the lion (X'oréba).
[825] They leave a region as soon as lions make it unsafe. "There is no point in hunting them."

The leopard (X'nába) is hunted with dogs (ariba). The
[439] chiefs of Amboland pay a good price for the skin, since little princes and princesses are not carried in a litter made of cowhide, but in a leopard skin. The jackal (≠Khai-eba) and the Löffelhund (//arúba) [a fox-like wild dog of the subfamily Octocyoninae] are hunted with enthusiasm. "Aruba" probably corresponds to N. //arob = striped jackal.

Wild dogs, "Khere," !nube (N. !goub) are preferably
[825] avoided. No notice is taken of the hyena, ≠Khai-lasa (N. ≠heirab),
[262] and it is not eaten. When they come near the camp, it is not a
[787] good sign.

1. X indicates a very low gutteral click, for which I know of no notation.

DAMA

[12 cont.]

843
262 The pregnant woman may eat no "ongaka" and no bushbuck (okapundja, //airibkhe); she is allowed to eat hares.

844 Birth takes place in the hut. Men may not be present. As soon as the umbilical cord (//náëba) has fallen off, the child's hair is cut and buried. Then the child is carried out of the hut. [553] The father receives it and gives it a name, which is chosen quite arbitrarily.

764 As soon as death occurs, the corpse is unclothed, wrapped in hides or blankets, and is placed in the grave on its left side in an extended position with the head toward the west. Brushwood is placed on the covered grave. People come there to weep. Offerings are not brought.

224
[177] At the beginning of the hunt, certain ceremonies are performed, which I believe have in part been taken over from the Ovambo.

The hunters meet at a certain place in the forest (Khoá !Khuásha). Every hunter brings a twig with omsati leaves; these are thrown together in one place (omsati-//khái-wa), and a circle is drawn around it in the sand. Each hunter steps into the circle and on the leaves and says:

[539] //am ≠haiba, //am ≠haiba (?)

[782] The leader answers:

!Khu !Khu /ao /ao /auschá   Lord! Lord! We must now go hunting!

When a wild animal has been killed, the lucky marksman first cuts a piece of flesh from it, roasts and eats it, and then divides the meat among his fellow hunters. No offerings are made.

224
422 This procedure is of the greatest interest. In the lower form of hunting practiced by primitive peoples, the individual huntsman is the undisputed owner of the game he has killed. In the case of the more highly organized hunting that these Bushmen practice today, the property right of the individual hunter is still stressed through these ceremonies, although ultimately the hunter receives no more meat than his companions.

222
[184]
[462]
[857]
[233] The gathering of veldkost does not have the great significance here that it does in the east. After all, the women already commonly cultivate a little garden plot, and the youngsters herd a few goats, while the men still practice hunting as their main OCCUPATION.

AKUANAMBUA

[13 cont.]

Chapter 4

The Bushmen of Ukuambi

115 At an outpost of the Finnish Ukuambi Mission, where I undertook anthropological measurements, I encountered a Bushman from the hordes that live on the northern bank of the Etosha Pan and stand in a loose dependent relationship partly with Ipumbo, partly with Shanika. I was able to converse with him only a few hours.

101 [614] These Bushmen in Ukuambi, as well as at other places, belong to the Ezimo of the Akuanambua. They themselves are divided into a number of exogamous kin groups. My informant belonged to the clan Ari-Ari. The tribe calls itself Akese or Kere and comes from the region between Okaukuejo and Outjo. Today this tribal organization is broken up. The following names -- formerly independent hordes which now live mixed together -- were mentioned to me: /Aru-Kwe, Ashuche, Asécha, !Kuru-Kwei, A !Kha-ta-bé, A-Hei-tére, A !gnuri.

648 [439] Insofar as these Bushmen do not already lead the life of the Bantu farmers, they are hunters, spies, and occasionally also executioners for the chiefs. They manufacture ostrich egg beads and poison. For twelve good ostrich eggs they receive a fat ox. The Ovambo have quite a peculiar outlook in this respect. They spurn the perfectly good eggs of their hens. The ordinarily somewhat "disreputable" ostrich eggs are purchased for dear money as a delicacy.

611 262 The sons belong to the family of the father, the daughters to that of the mother. The men are not allowed to eat hares, but the women and children do. The eating of hyenas and boa constrictors is prohibited to all.

776 Concerning their religious conceptions I was able to discover the following: In the sky dwells the great captain !Khuwa, which means the same as Huwe. In answer to the question about God, however, he stated that this was Erob, which naturally coincides with the name for God, Ellob, of the Rhenish Mission. The name !Khuwa only occurred casually in the conversation. He was unable to give a clear answer to my question as to whether

[28 cont.]

535 585 makes his appearance as the bull of some animal species that the two kin groups especially prize. He takes his place in the row of dancing men. Across from them the women have taken up their position in a long row and accompany the dance by stamping, singing, and clapping their hands. The bride stands among them. She is in no way distinguished from the other women and girls. After a few turns, the bridegroom steps out of the row of men, goes dancing toward the bride, seizes her, and dances back again. The bride then comes from the row of women, clapping her hands, stamping, and singing as she moves toward the bridegroom; without touching him, she turns back, keeping her face turned toward the bridegroom, and rejoins the row of female dancers. With this, the external formality of concluding the marriage in front of many witnesses is over.

583 591 "It is the young man's duty, however, to leave his paternal kin group for a year and to work for his parents-in-law. This means that any spoils he gets from hunting must be left in his mother-in-law's hut. He, of course, gets his piece during the distribution of the meat, but he is not yet regarded as the actual provider for his young wife, who, as before, receives her share of the meat from her mother, although she searches for veldkost for herself and her husband.

(224) 262 "As a hunter, the man eats only the flesh of the rump. The women and children receive the legs and intestines. Children are not allowed to eat certain parts; for example, a child may not eat the heart of a jackal. The child would not become sick by doing so, but since the jackal is very cowardly, the child would also become cowardly. [825] [828]

591 [29] "After the first year of marriage with its obligatory service, the young wife follows her husband to the encampment where the man's father or his kin group resides.

845 847 "If the child is so weak that it probably will not live, or if it has a physical defect, it is buried alive on the same day, with or without the consent of the father and mother.

553 852 "The name of the child is given by the father. This is done a few days after birth. The father spits on the child's chest and calls it by name. Others sprinkle it with water from a well.

!KUNG

[32 cont.]

224 go to the kin group to whom this territory belongs and take the
423 men to the animal. Then it will be carefully divided down the
middle; the hunter gets one half, and the owners get the other
half. Nevertheless, quarrels are common, because there is only
one of certain organs, such as the heart, liver, etc. These conditions,
[184] however, exist only among the eastern !Kung. A
Hei//om or a northern !Kung who is found hunting in the territory
224 of another tribe is regarded as an enemy. Boys' hunting is confined
[857] to lizards, tree rats, and other rodents. They ordinarily
[411] use the bird arrow, which is carved out of a piece of wood, but
in contrast to the Ovambo, the older boys here already have
[223] poisoned arrows. Young and old pursue the hunting of birds with
great enthusiasm; in particular guinea fowl, sand hens, grouse,
and the Pau [?] insofar as it occurs in this region. These fowl
[262] and small bushbucks are the chief sources of the meat in the
[136] native diet. The forest region of the eastern !Kung is poor in
large game. Zebras are almost entirely absent, as is the
wildebeest; the giraffe is very rare. The eland, kudu, hartebeest,
and especially the gemsbok are relatively more common. Hunting
drives are organized to hunt the elephant or rhinoceros. First,
the elephant is separated from the herd. As soon as it has been
cornered, one Bushman after another springs forward and throws
his spear. It is also possible to hunt the elephant with poisoned
arrows; there is a number of thinner spots in the skin at the front
legs, and the marksman places as many arrows there as possible.
The elephant does not die; it merely becomes sick. The hunter
rushes home to get some other men, who then go to look for the
elephant with spears. Pitfalls are made in the vicinity of the
watering places, and a pointed pole is placed inside them. The
Bushmen along the Okovanggo also hunt the hippopotamus with
pitfalls. The eastern !Kung maintain that in ancient times the
hippopotamus was also found in their land. The sling trap is made
[223] in various sizes. The ostrich in particular is usually caught in
such sling traps, which are provided with a piece of bone bleached
by the sun. Small cats and the like are also caught with this trap.
It is likewise placed on the trails of the bushbuck. Jackals and
the like are caught by lying in wait for them as they come out of
their dens and then beating them to death with the kirri.

[32 cont.]

222 Termites are captured in two ways. During the night holes
are dug near the tall termite hills, and these holes are illuminated
with wooden torches. A hide is placed on the floor of the hole,
and soon so many termites are on it that the hide can be carried
home. The second method is used to catch those termites that
have no structures above ground, but have a network of corridors
running horizontally immediately below the surface. A hole is
dug deeper than the corridors, and the termites fall into it as
they run frightened back and forth on their [33] horizontal paths.
[821] This kind of termite serves as a weather prophet for the rain
[787] doctor, since they construct the most openings facing upward when
224 a rainy year is in prospect. The lion was not hunted. In olden
● 262 times, only the old people ate the large game. The flesh of
predatory animals is forbidden to all children; on the other hand,
there is no prohibition against eating hare.

224 Naturally, the Bushmen are very anxious to have success in hunting. !Khu himself, the great captain, brings luck in hunting. He orders the supreme //Gauab (/Nawa) to direct the arrow. The doctors always pray to the great captain to send hunting luck, but there is no specific formula. They do this "quietly to themselves." An old prospector in Kalkfeld told me that he had seen the following among the !Kung Bushmen: "Before they go hunting, they draw the outline of the animal in the sand and with all kinds of ceremonies they shoot an arrow into the drawing. Where the figure is hit, the game will also be struck."

I shall now render fairly literally the course of a kudu hunt as it was described to me by a Bushman: "When I have found a kudu track, then we follow it very quietly and when we have found the place where the kudu ate, then one must be very careful. One person goes ahead, and the others follow. Now, when I see the kudu standing, I take out the poisoned arrow and shoot. Then I look to see what the kudu is doing or shoot once more; then I follow him to see whether the arrow will drop out; if the arrow falls out, I take it and see how deeply it penetrated into the kudu. Then I have to go back to the other hunters and state exactly how everything was. Then we go home. One should not run after the kudu, but must leave it alone. The person who

[33 cont.]

224 has done the shooting must go home immediately and may not speak, eat, or drink, for if the hunter speaks with others, the kudu will not be found for a long time, and if he drinks water, the poison will become watery and will not be effective, and if he eats, the kudu will remain quiet and the poison will not work effectively. The next morning very early we must set out on the trail. The kudu is already dead. The people carry the meat home.
[782] Then it is put on the socha [sacred] fire. The //Gauab must be given some of the meat. Whoever does not do this will be punished by the //Gauab with serious illness, and the people will say: 'That is just. The //Gauab has given him the game, why does he give nothing for //Gauab?'" Here, therefore, a true primitial offering is involved.

It is interesting that the Ogowe bury arrows in the sand at various watering places, with the poisoned tip pointing upward; they do this in shady spots that game animals like to use as resting
[202] places, and by certain signs, such as tying together blades of tall grass and the like, they set up warnings (Von Zastrow and Vedder).

When a Bushman horde of today is able to hunt down half a dozen large antelopes in a year, it can consider itself lucky.

The porcupine is also commonly hunted, as are the scaly anteater and the fat aardvark, which is very common but difficult to catch. Monkeys are very rare; on the other hand, tree rats make a desirable addition to the diet. The ostrich is not uncommon in open terrain, and ostrich eggs are greatly coveted. Occasionally a boa constrictor, which tastes like a fat fish, or an iguana may round out the menu.

136 Among the animals which are in any way dangerous to human beings, the lion should be mentioned in particular. They occur in great numbers, but rarely stay in one place for a long
[165] period of time. A considerable number of Bushmen become their victims, especially in the north. Lions, leopards, hyenas, and
●262 jackals are neither hunted nor eaten; the same is true concerning
[253] birds of prey. Eating leopard meat produces fever and eczema,
[825] while eating the flesh of birds of prey produces temporary blindness and symptoms of sickness similar to acute sausage poisoning.

Poisonous snakes are not eaten; they are much rarer here than in the stony regions of the central and southern areas, and they do not constitute a noteworthy danger.

!KUNG

[35 cont.]

222 When all the old women have made their tests, then the children
also get some, and the veldkost is, so to speak, made available
for general consumption. When a woman has found a spot where
[423] there is a great deal of veldkost, she makes a sign at this spot, and
then everything growing there belongs to her. No one will take
any of it.

[262] There were and still are a whole assortment of types of
[888] socha veldkost reserved for the old people. [Fig. 3 appears here.]

11. Ergology

Fire

372 The Bushmen believe that there was a time when they had
773 no fire. The following legend tells how they obtained it: "The
ostrich had a firebrand under his wing. He, the owl, and Heiseb
played together. Then the ostrich took fright at the owl because
he thought the owl had horns. He advised all of them to sleep for
a little while. When the owl was asleep, he blew at it and saw
that it merely had little tufts of feathers and no horns on its head.
Thereupon he awakened the two others again and invited them to
go on playing. Then Heiseb said: 'Dear ostrich, please wave your
wings.' The ostrich did so, and as a result its firebrand fell to the
ground. Heiseb picked it up and threw it to the fig tree, and since
then man has had fire." -- The narrative probably comes from
the legend-circle of the Hei//om Hottentot. Otherwise, Heiseb
never appears in !Kung stories. Two pieces of wood from the
372 fig tree are still used occasionally to make fire. For the most part,
the most popular devices for making fire are a striking iron and
flint; matches are less [36] prized. A pair of fire sticks, the
sucking reeds, a few poisoned arrows, and a bird arrow make up
the permanent inventory of the quiver.

!KUNG

000 [42 cont.]
622 the mother's kin group. One of the tasks of the village chief is
372 the guarding of the socha fire. Socha means pure or sacred or taboo.
778 Foods that are prohibited for certain age groups or for one sex are
[262] "socha" for these persons. The word "socha" seems to me to be a
784 very ancient one, or else it is a loan word from another language.
Every place has at least two fires: the ordinary one, which is
166 available to everyone, and the socha fire for men only. When the
372 village moves to another place, the family head takes the socha
[596] fire along. During the march veldkost is gathered. Once they
252
264 have arrived at the new place, the family head starts a new socha
621 fire under a tall tree and roasts the veldkost. The boys leave im-
[462] mediately and go hunting, while the women and girls set up the
windscreen. Whatever the old man has roasted at the socha fire
he is supposed to eat by himself; ordinarily this is what he does.
Finally a messenger arrives and announces that a head of large
game has been killed. Hours pass; the old man simply remains
seated there, while the women and children make themselves
comfortable in the new windscreen. [Fig. 15 appears here.] The
game is brought to the socha fire, and the meat from the legs and
[262] shoulder blade is cut off and given to the women and children,
who are never allowed to eat meat from the bone. All the rest is
[622] consumed by the men at the socha fire. The village chief also has
the task of organizing the celebration for the first veld fruits. The
hordes that I visited no longer practice this custom. Vedder has
described it for the !Kung of Gaub.

178 When Lieutenant Fischer rode from Namutoni to the
622 Okovanggo in 1908, the Bushmen everywhere still had a tight
organization and a common leader. When Captain François went beyond Grootfontein for the first time, he was given considerable support by the chief of the !Kung Bushmen. It is worthy of note that the famed copper mines of Tsumeb, on which the welfare of Southwest Africa depends to a great extent, were discovered by a Bushman chief (2). Since then the eastern !Kung have not had a chief. The northern !Kung supposedly still have one. The oldest chief I heard of was "X'amme," the lion. He was a great huntsman.

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2. He himself was a half-breed.

!KUNG

[45]

Gastrointestinal Disorders

753 It is interesting to note that the doctrine of the importance
[171] of the liver and gall bladder in the origin of disease, which we
find among all primitive and civilized peoples up to the humoral
medicine of the previous century, is already present among the
Bushmen. When the gall bladder is full, one becomes sick and
[755] vomits gall. Then the region of the liver is massaged, just as is
done in the case of liver pains. Enlargement of the liver as the
[164] result of chronic malaria is common. The moon, which dies
[821] every month, also has gall sickness, and moonlight is the juice
of the gall bladder vomited by it. Moonlight and gall are known
[164] by the same word (goo). Spleen tumor is especially common
757 among children. They have no medicine against splenalgia.
278 They have no medicine for inducing vomiting. It is induced by
putting the finger or a feather into the mouth. To stop vomiting,
one chews little twigs of the goro tree. The bitter wood of the
liana (X'áǎ-X'ã́n) is chewed for stomach-ache. In case of con-
[753] stipation the doctor must practice magic, for it is assumed that
[755] the dsao have tied the stool in the intestine, and the doctor must
loosen and extract the cord, just as in the case of an inflammation
of the throat. The patient may not eat anything and drink very
little. In case of diarrhea, even the bleeding kind, the same
medicine is taken as in the case of stomach-aches. Intestinal
147 worms are unknown. We already know from earlier reports that the
262 gastrointestinal tract of the Bushman can take all kinds of things
that we cannot take. As the result of habituation from early child-
hood on, he can digest meat that has gone bad and the like, without
any trouble (1). After a long period of hunger, he can consume

1. I myself witnessed a drastic example of this. I had brought a side of bacon from Swakopmund, which supposedly had been preserved for all eternity according to a special process. When I brought it out, it had a hideous smell, and in order to prevent the Bushmen from taking it and getting sick, I had it hung high on a tree. The

[45 cont.]

> 147 Bushmen stared longingly at the discolored
> 262 lump of fat. Finally they sent a deputation to me, saying that they wanted the bacon for their dogs. The moment they received it, it was skillfully divided according to families and consumed in the course of a great feast, without any harmful effects.

enormous quantities, but such excesses as a rule are followed by an indisposition. The day after a major feast, almost all of them lie in the sun with stomach-ache and gripes. In other words, even a Bushman should not be credited with the impossible with regard to food; many things that seem repulsive to us, such as earthworms, lizards, thick grubs, mice, and the like, are in themselves not at all harmful to health, especially since the Bushman only eats them cooked or roasted. Bushmen who have grown up on the farms can take the same diet as the Whites or Blacks. On
147 the other hand, the wild Bushmen who have grown up on veldkost
262 and the flesh of wild animals cannot accustom themselves to the
648 work and prison diet of the Blacks. A term in jail of any great length means condemnation to a slow but sure death for most Bushmen. The prisoners show the symptoms of vitamin deficiency, become infirm, get edemata on their legs, dropsy, and unfailingly perish. In the initial stage severe sluggishness of the bowels sets in. Ample portions of fresh meat can keep the Bushman healthy even in imprisonment. The fact that Bushmen run away from the
[464] farms is based in most cases upon their inability to endure any
[146] longer the diet given them. The vitamin need of the Bushman who has grown up in the wilderness is undoubtedly much greater, and his longing for meat, which often appears pathological, can be explained as a physiological craving for vitamins.

Diseases of the Urogenital System

164 Catarrhs of the bladder occur; in such cases a flat stone
(755) is warmed in the fire and placed on the bladder region. Hematuria, evidently the result of nephritis, was twice treated by my friend

≠AUIN
NOGAU
NARON

[68 cont.]

1. Birth and Childhood

844 Among the ≠Auin, the husband of a woman in childbed slings
the string of his bow around her stomach, but he is not present at
the birth itself. The cord is severed with the tip of a reed splinter.

Among the Naron and Nogau, the delivery proceeds as it does
844 among the !Kung; an old woman usually provides assistance, however.

Twins (Hoi-holi) are not desired; among the Nogau one of
845 them is killed.

Among the Nogau, the father gives the child its name.
[553] There the child has its umbilical cord severed by means of a
844 sharp quartz splinter. A woman in childbed may not eat blood
and head meat. Until the child is able to sit up, the husband
[833] may not cohabit with the mother. The latter custom is also found
among the Betschuana. Nogau children are not allowed to eat
262 the flesh of the wildcat and of two birds (tsugnussi and /gui).
[114] Kaufmann has made some observations concerning children's
524 games; Bleek also provides some data:

Among the ≠Auin little bows and arrows serve as children's
toys. The same applies to the Naron and Nagau [sic]. Stilts
[481] are known among the Auin and are used by men and boys. Con-
524 cerning children's games among the Naron, Miss Bleek reports:

The Game of the Big Water Snake

A boy crawls on his stomach to a small pile of sand which is supposed to represent the waterhole. At some distance from it, the children sit in a row, one behind the other, in such a way that each one sits between the legs of the one behind him; he puts his hands on the shoulder of the person in front of him. The biggest child [69] always sits at the front, the smallest at the back. They sing a song that in part is no longer intelligible. (Probably in the children's language.) This big "snake" now moves very slowly around the waterhole, while the water snake from time to time throws sand on it; then the others withdraw. At the end the snake catches one from the row and "eats it." I

NOGAU
≠AUIN

[69 cont.]

881 assistants, the boys go into the bush. On the first day two vertical incisions are made on the forehead; then they sing throughout the night and dance to the melody: "Ije, ije, aije, aije . . . [539] oho, oho," etc.

On the morning of the second day, the incisions on the [304] forehead are extended to the root of the nose and the hairline. On the afternoon of this day the elders call the youths together to look for veldkost. The elder loosens the roots with his digging stick, and as he does so the candidates place their hands on the arm doing the work. The boys must then dig the roots out of the ground with their hands, without the help of tools. "From now on they can look for veldkost themselves, for now they have been taught."

After this lesson they return to the place where the women are. [70] Food is prepared there for both the men and the candidates; the candidates are allowed to eat only veldkost, no meat. Then they dance, together with the women and girls, for a night and half a day.

In the afternoon the candidates go hunting. They must bag three animals: a small duiker, a guinea fowl, and a bullfrog. They take their prey and assemble with the older instructors at a remote place, the three kinds of meat are cooked together, the meat is eaten by the elders, and the bodies of the boys are washed all over with the soup. From now on they may eat the three ● [262] animals, hitherto forbidden to them. Now they again dance and [539] sing: "Oouu, oouu, oouu, oouu, oouu" (long drawn-out).

≠Auin: The candidates from neighboring villages go into 881 the bush under the leadership of the doctor, and they live there on veldkost for a few weeks. During this time they receive instructions in secret matters. Kaufmann reports the following [535] dance: A boy gets up on the back of another, and both of them wrap themselves in a large hide mantle. The dance consists of the carrier swinging from one leg to the other as rapidly as possible without moving forward, and both of them yell "hu, hu." They actually attain manhood, which gives them the right to marry, only through the hunting test. Tattooing is not connected [304] with the declaration of manhood.

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Hei//om

[76 cont.]

113 *South African Journal of Science*, Vol. 25, 1928.

J. Moir, J.S.A., *Chemical Institute*, VII, 1924, p. 28.

J. Moir and J. Lewis, J.S.A., *Chemical Institute*, VIII, 1925, p. 11.

H. H. Curson, *Some Little-known South African Poisonous Plants and their Effects in Stock*. Thesis for Diploma of F.R.C.V.S., 1926.

278 lives on the roots of an acacia. The Bushman carries several of these cocoons around with him, like cartridges, in an antelope horn. If the arrow tip is to be poisoned, a fire is made, some of the acacia resin that the Bushman always carries is smeared on the arrow tip, and then a cocoon is broken and its contents rubbed on the tip. On one occasion one of my Bushmen had overlooked a small wound on his thumb, through which the poison penetrated into his blood stream. The penetration of the poison was not very painful; he merely had a feeling "as though warm water was penetrating into his flesh." The arm was considerably
[752] swollen for a week. The others made numerous incisions and scarifications with glowing sticks on him in order to save him.
●[262] The flesh of the animal killed in this way is eaten raw, poisonous.

278 Von François (2) reports that the Hei//om of this region

[113] 2. Von François, "Reiseberichte Windhuk-Gobabis [Travel Report, Windhoek-Gobabis]," *Mitteilungen aus den deutschen Schutzgebieten*, V., 1892.

prepare their poison from the milky sap of the *Apocynacea adenium* Boehmianum. When exposed to the sun, it first becomes violet and then black. It is kept in little leather sacks and in case of need is warmed and mixed with the sap of the *Habas* root and applied to the arrow tips with flat sticks. These Bushmen still
[411] used grooved stones to direct the arrow shaft.

≠AUIN
NARON
NOGAU

[78 cont.]

000 it with the fingers. [Fig. 29 appears here.]

224 [79] The lion is neither eaten nor hunted. The jackal and
●262 leopard are eaten, as is the liver of the latter. Baboons are not
825 eaten, because they were formerly Bushmen.

304 The line of tattooing between the eyebrows make people
302 into leopards among the Nogau. The Naron smear themselves with red and black color. The other incisions and tattooing are made purely for adornment.

825 Among the Naron, millepedes are regarded as creatures
756 of Hise, and only doctors may touch them and make medicine of them. Among the Nogau and ≠Auin there are magical bones
787 that are used to predict the future. The Naron also believe that
[172] the rock engravings stem from //gauwa.

Among the Auin it is forbidden to eat hyena flesh, and
262 likewise the flesh of the shabrack jackal because it is a dog.

The following important data supplied by Gentz (1) should be added:

"I have repeatedly found Bushman arrows on which the point, usually made of bone (for the most part ostrich bone), was made of wood. The game sling, reproduced in Figure 29, is constructed as follows: A strong string, four to five millimeters thick, which at one end terminates in a simple loop, is fastened at the other end to a flexible young tree or branch that is bent far over. A small, thinner string with a transverse stick is attached at the loop end. The string is placed around a small post driven into the ground at an angle, and it is prevented from slipping off by means of a flat piece of wood buried under the ground and planted against the free end of the transverse stick; the sling is placed in a circle on the ground over the flat piece of wood. The game, which follows its customary track to the

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[114]
[113]

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1. "Einige Beiträge zur Kenntnis der südwestafrikanischen Völkerschaften [Some Contributions to Knowledge of the Southwest African Tribes]," Globus, Vol. 83, 1903.

Heikum
Kung

/253 cont./

533 once in a while, one of the dancers emits a loud yell, usually in a high falsetto, and sometimes a trill which likewise is pitched as high as possible, depending entirely on the individual's emotional state.

The clapping at a dance is audible over a great distance. One evening when I approached the station, I could hear the clapping of the dancing women at a distance of three kilometers.

The dances I have described seem to be widely distributed
535 among the Bushmen. At any rate, I found all three of them with
194 only slight variations among the Kung people residing in the Kaukau Veld.

Concerning the diet of the Heikum Bushmen I was able to dis-
262 cover the following. I should add my regret at this point that I
● lacked the necessary background for giving the botanical names of the veld crops.

The diet is predominantly vegetable; however, the Bushman is by no means a despiser of flesh. On the contrary, whenever he can have animal food, he will utilize it for his kitchen. In so doing, he is so unselective that one could say he eats everything he can lay his hands on. I have even seen Bushmen consume hyena flesh with great pleasure. The flesh is obtained partly by
224 hunting with bow and arrow, and partly with game traps. I shall discuss the hunting weapons later; here I only want to mention a game snare which I had the opportunity to observe in the Kaukau Veld. A snare twisted from plant bast had been placed on a game trail, drawn upwards by means of a flexible stalk stuck into the ground, and fastened to the ground by means of wooden hooks. When the game touches the snare, releasing it from the hooks, the flexible stalk pulls the snare up and shut. Game is also caught in traps. I was shown an iron hook fastened to a bamboo stick about five meters long, which was used to pull out game that had fallen into the pits.

The animals of the Bushman's hunting domain include all kinds of antelopes, from the giant eland to the tiny duiker, giraffes, hogs, hares, and, in the way of birds, predominantly guinea fowl.

The Bushman, however, finds objects to enrich his cuisine even among lower animals. In the realm of the amphibians he prefers

/253 cont./

224 the large bullfrog, whose bass voice resounds in all the puddles during the rainy season.[1] The flesh of the frog is boiled with the 252 skin and bones, pounded to a paste in wooden vessels, and then eaten. Among the insects, grasshoppers and termites are used for 222 food. Both are roasted. In the brief time that they are winged, the termites are lured in such great numbers to a fire maintained for the purpose of catching them that it is an easy matter for the Bushman to collect a rich booty in a few hours. A special delicacy in the Bushman household is wild honey, which, as I was able to ascertain, is extremely tasty /254/ and is to be found in quantity on the Omuramba omatako as well as in the Kaukau Veld.

825 The bullfrog is called ntchei by the Bushmen (Herero: otjisume), the termite, /ui (Herero: othohumboli).

The vegetable diet naturally changes with the seasons and is ● 262 quite varied. I shall attempt to give a brief survey, though at 824 the same time I am aware that it can lay no claim to completeness.

1. The chamá or taba (Herero: omatanga). These are the roasted kernels of the Kaffir pumpkin [melon?], widely known here, which produce quite a tasty dish.

2. The //úni (Herero: omarunga); this is the Heikum Bushman name for the palm tree that is common in this region. The edible parts of the tree are the apple-sized fruit, whose skin has a sweetish taste reminiscent of St. John's bread, and the soft interior of the trunk. The latter is a whitish, soft, fibrous pulp, which the Bush- [252] men prepare by cooking and pounding.

3. A species of white mushroom called naú by the Bushmen, majova by the Herero. The mushroom grows during the rainy season especially along the edges of termite hills; the diameter of its cap reaches about 20 centimeters. It is eaten raw as well as [252] boiled. I do not know whether it is true that excessive eating of this mushroom has a detrimental effect on mental activity, as the Herero aver – ejova, plural majova, is the Herero word for stupid.

4. The unki, a well-known species of onion, about the size of a hazel nut, called //au by the Bushmen, is very common and forms an important part of the kitchen provisions, not only among the Bushmen, but also among the Herero.

[252] 5. The //guitcha of the Bushmen, ussessenga of the Herero,

Heikum
Kung

/254 cont./

262 824 [252] is a tuberous fruit, eaten roasted, whose taste is reminiscent of potatoes.

6. A similar tuberous fruit is the ondubi of the Herero; the plant has rose-colored blossoms and long lanceolate leaves.

[252] 7. The ắrugu (Herero: omakungu), a type of cucumber. The plant is a climber whose fruits resemble our cucumbers; they reach the length of a finger and, when they ripen, become bright red in color. They are roasted in ashes and eaten warm.

8. The //ắniba (Herero: maramba), a small bush with a bean-like fruit, similar in appearance and taste to our broad beans.

[252] 9. The sng of the Kung Bushmen; this is a large climber with double-lobate leaves whose mighty root is greatly prized by the Bushmen as a water tuber. The fruit is the size of a walnut and consists of two cotyledons enclosed by a rind which in its fresh state is soft and becomes very hard when dry. Between the fruit and the rind there is a small quantity of a whitish, slimy fluid which keeps the interior of the rind /255/ lubricated. After removal of the rind, the fruit is dried and roasted and then has the taste of the groundnut which is so common in East Africa. Its use has a distinctly laxative effect.

10. Like the Herero, the Bushmen are acquainted with other water tubers. The Herero word chue designates a smaller root with a very high water content, which has the shape and size of our beet.

[252] 11. The /a fruit of the Kung people is a nut slightly larger than the walnut, whose kernel, in a hard shell, tastes like our hazelnut. The hard inner shell is enclosed by a softer outer shell which has a distinctively sweet taste and which the Bushmen boil to a sauce which in appearance and taste is distinctly reminiscent of applesauce.

291 There is not much to be said about the clothing of the Heikum. The men content themselves in most cases with a leather loincloth which is fastened in the back and front to a belt tied around the waist.

The women wear the same kind of leather cloth of slightly greater length around their loins and tie a second hide from one shoulder to the opposite hip.

A party of /Kung men had gone hunting towards the west. John, our son, was with 821
them. In the afternoon there appeared in the western sky three little white clouds, like 825
three powder-puffs in a neat row. They were the first clouds to be seen since the big
rains had ended in March. We ran to each other, pointing them out. People felt
happy. In the evening, when the hunters returned, ≠Toma came at once to me,
before he put down his bow and quiver, and said that I could see for myself what it
meant to *≠gani* an animal. John had *≠gani*(ed) the wildebeest he shot, and the clouds
had appeared immediately above them. ≠Toma said this was what he had been trying
all along to explain to me.

If a hunter knows with certainty that he has *≠gani*(ed) or *//ghui*(ed) an animal, as it 821
was known when John killed the wildebeest that he had *≠gani*(ed) it, he may take the 825
horns and the scalp and forehead bone and hang them in a tree, remembering where 789
they are and whether they had been *≠gani*(ed) or *//ghui*(ed). If need should arise he
could get the horns which were appropriate to the need and burn them in a specially
made fire away from the cooking-fires. He would take a piece of the burning horn
and point it to the sky saying '*goichi goichi goichi n/ow qui*'. This we were told is
'speaking *n/ow*'. The interpreters did not know and could not find out by questioning
people what the words mean. We wonder if they are an archaic spell. The horns must
be entirely consumed by the fire.

In *Bushman Folklore*[1] there is a reference to the burning of horns in a very interesting 773
myth about the Rain Bull, related to Dr. Bleek in 1878 by a Bushman from Strontbergen (30° S., 22° E.) whose dialect included the fifth click of the southern group, as
the Katkop dialect does. In this myth a young woman cleverly saves herself from
being carried away on the back of the Rain Bull to the water-pit where she would
have been turned into a frog, and all of her people also would have become frogs. At
the end of the myth the informant who related it said, 'The old women who had
been out seeking food were those who came to burn horns, while they desired that the
smell of the horns should go up, so that the Rain should not be angry with them.' 789

A hunter has another way of controlling the weather. To bring rain he would cut 821
the throat of an animal he had reason to believe he habitually *≠gani*(ed), or to stop 825
rain, one he habitually *≠ghui*(ed). The blood, which is ordinarily saved and eaten, [262]
would be allowed to flow on to the ground. A giraffe is the best animal for bloodletting. The forms and colours of the clouds are like giraffes, the /Kung remarked.
We asked if human beings cut themselves and used their blood to start or stop rain
as they do their urine or hair. The /Kung said, No, they did not. That would be unnecessarily painful.

As far as we know the /Kung did not attempt to control the weather by these means 183
while we were with them, as they did not resort to burning urine or hair of persons. 789
Perhaps this was because the weather took its normal, expected, seasonal course. 821
Furthermore, we did not experience its most severe extremes for very long periods, [132]
and found it on the whole quite bearable. Or perhaps the concept of controlling
weather by means of burning urine, hair or horns or letting blood, exists more in lore
than in active practice. Or perhaps the long unchanging months do not stimulate the
idea of actively attempting to control weather and the people content themselves with 789
explaining rather than controlling. They appeared in many instances to have the 821

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[1] Bleek and Lloyd, op. cit., pp. 193 ff.

As the spellings of the Bushman names on my herbarium specimens 128 are from field notes, they are often different from the spellings given in this paper, which was done after I had had the opportunity of consulting the authors I have mentioned. It will be noticed that many of the plants do not have the full set of Bushman names. The main reason is that we were not in contact with the Eastern !khû speakers until we had passed Ghanzi, and lost contact successively with the |gikwe, ||ganakwe and !hɔ̃: speakers as the expedition drew to a close. Other reasons are that my field notes were sometimes inadequate, that I forgot to ask, and that some [184] plants appeared restricted to certain areas and were not known to all the groups of Bushmen.

As the expedition was during the winter when most of the plants were 126 in poor condition, very little photography was done in the field. Most of the photographs are from plants which were sent back to Pretoria and cultivated there, or from plants which grow naturally in the Transvaal. In [128] this paper the plants and photographs are arranged according to de Dalla Torre and Harms (1900-1907). Specimen numbers are in brackets.

There is little doubt that the plants discussed here represent only a 114 fraction of those used, for we covered a very small part of the area over which the Bushmen range, and this when probably most of the annuals were dead, when some foods were out of season and when the above ground parts of many bulbous and tuberous plants had withered and disappeared so that the plants themselves could not be found.

Because of poor yield, poor quality, difficulty in harvesting or lack of 000 flavour, not many of the Bushman food plants would be worth cultivating in their present form for the use of civilised people, but they offer a large field to the plant breeder. The most promising have been noted accordingly in the text.

There were few bones around the Bushman encampments, but this 262 does not necessarily mean that there is a scarcity of meat in their diet, for the bones might have been removed by porcupines (Alexander, 1956; Dart, 1957) or eaten by hyaenas. A more reliable indication was the [291] scantiness of the Bushmen's skin coverings. There are sharp frosts in the Kalahari and sometimes bitter winds, and one may argue that the Bush- [132] men would provide themselves with sufficient skins if they had a regular supply of meat, although admittedly they eat skins after charring them on the coals and pounding them in a mortar. Vegetable refuse from former meals and fresh vegetable food, however, were found at all the Bushman encampments, and additional gatherings were the permanent chore of the women and children and of the men to a lesser degree. The insanitary condition of the surroundings also provided unmistakable [364] evidence that the bulk of their food was of vegetable origin.

Their knowledge of field botany was astonishingly good. It has to 824 be, otherwise they would have no chance of survival in their arid country. Fragments of stem, dead leaves, and other small clues of this nature, after being unerringly identified, were all the Bushmen needed to find many of the storage organs they were seeking. Differences which escaped me would enable them to distinguish between edible and harmful plants, and they had a thorough knowledge of the areas and habitats in which their food plants grew. They must have an influence on the distribution of plants, 137X

SYNOPSIS AND DESCRIPTIONS.

128 The synopsis is intended as a guide only, and leads to groups of plants and usually not to species. The descriptions and photographs should make the final identification possible, but it should be remembered that there are many Bushman food plants which were not seen on the expedition and which are therefore not described in this paper.

I have taken for granted that the reader will realise that the measurements of plants and their organs vary, and for this reason I have usually given what I consider to be the average and have omitted most words like "approximately" and "about".

Technical terms have been avoided except for the following:—

Axil of leaf—the angle between the leaf and the stem;
glabrous—without hairs;
glaucous—bluish-green, or covered with a bloom;
pappus—a tuft of hairs on a seed;
perianth—petals and sepals;
rhizome—an underground stem;
tomentum—dense short hairs;
tuber—a roundish succulent underground stem.

UNDERGROUND PARTS EDIBLE.

137
262

Trees or shrubs	*Bauhinia macrantha.* *Boscia albitrunca.* *Commiphora* spp.
Prostrate runners	*Bauhinia esculenta.* *Cucumis* sp.
Climbers or scramblers:—	
Scramblers	*Ipomoea verbascoidea.*
Twiners	*Ceropegia* spp.
With tendrils	*Coccinia* spp. *Corallocarpus welwitschii.*
Fleshy finger-like angled erect stems	*Caralluma knobelii.* *Duvalia polita.* *Stapelia kwebensis*
Without chlorophyll	*Hydnora* sp. *Terfezia* sp
Wiry 12" stems	*Ipomoea* sp. *Raphionacme burkei.*
Monocotyledons (strap-shaped or grass-like leaves):—	
Bulb with papery coverings	*Dipcadi* sp. *Mariscus congestus.* *Scilla* sp.
Rounded storage organ without papery coverings	*Eulophia* spp. *Walleria* sp.
Horizontal rhizome	*Sansevieria scabrifolia.* *Typha capensis.*

II

ABOVE-GROUND PARTS EDIBLE.

Trees shrubs or palms:—	
Thorny or spiny—	
Large fruits more than 1½″ in diameter	*Hyphaene ventricosa.* *Strychnos* spp.
Small fruits less than 1½″ in diameter	*Commiphora pyracanthoides.* *Ximenia* spp. *Ziziphus mucronata.*
Pods	*Acacia* spp.
Not thorny or spiny—	
Leaves compound—	
Stems more than 2′ thick	*Adansonia digitata.* *Ricinodendron rautanenii.*
Stems less than 2′ thick	*Burkea africana.* *Lannea edulis.* *Rhus commiphoroides.* *Sclerocarya caffra.*
Leaves simple—	
Fruits winged	*Combretum* spp. *Terminalia sericea.*
Fruits not winged—	
Leaves bilobed	*Bauhinia macrantha.*
Leaves not bilobed—	
Leaves hairy	*Dichapetalum cymosum.* *Ehretia rigida.* *Grewia* spp. *Royena sericea.* *Strychnos cocculoides.*
Leaves glabrous	*Boscia albitrunca.* *Ochna pulchra.*
Prostrate runners—	
Stems and leaves fleshy	*Talinum arnotii.*
Leaves bilobed	*Bauhinia esculenta.*
Fruits spiky	*Citrullus naudinianus.* *Cucumis hookeri.* *Momordica balsamina.*
Fruits smooth	*Citrullus vulgaris.*
Climbers or scramblers—	
No tendrils	*Pentarrhinum insipidum.* *Pollichia campestris.* *Sarcostemma viminale.*
Tendrils—	
Fruits spiky	*Cucumis metuliferus.* *Momordica balsamina.*
Fruits smooth	*Coccinia* spp. *Corallocarpus* spp.
Fleshy finger-like angled erect stems	*Caralluma knobelii.* *Duvalia polita.* *Stapelia kwebensis.*
Fleshy slender round erect stems	*Sarcostemma viminale.* *Talinum arnotii.*
Slender lax stems about 1′ high	*Pollichia campestris.*
Stemless, with one soft leaf	*Ophioglossum sarcophyllum.*
Monocotyledons (strap-shaped leaves or fleshy leaves with spiny margin)	*Dipcadi* sp. *Aloe* spp. *Typha capensis.*

X137 *Terfezia* spp. (5031, 5616) Photograph 1.

Naron Bushman......	,ku-ts'ɩ
Eastern !khũ Bushman	,tsu-ts'ɔ

In size, shape and colour these truffles resemble potatoes, but the skin is rough and they are not as heavy.

The genus Terfezia, which is allied to the European truffles, has been recorded from dry and sandy localities between the northern Cape Province and the Mediterranean region. There are 36 species, of which three are believed to occur in South West Africa and the Union. Some records are vague and incomplete, and cannot be checked. These southern species, all of which are edible, are not distinguishable except by microscopical examination. They may be found from April onwards to about July, when the season ends presumably through their disintergrating in the soil. Their presence depends upon the rainfall, as is shown by the following extract from a letter from Mr. G. Scholtz, of Ghanzi, whom I had asked to collect some for me. "Nature appears to be against you this year. I even offered five shillings per truffle, but according to the Bushmen (my offer was just laughed at) no rain, no truffles. And we certainly have had no rain, in fact the worst drought in Ghanzi's history."

It is uncertain whether they are root parasites or mycorrhizal fungi, and nothing definite is known as to the host plant favoured by any particular species. In the south-western Kalahari, near the Kalahari Gemsbok National Park, they are found in the dips between the sand dunes where *Aristida ciliata* is the dominant grass, but it has not yet been established whether they are connected with it or with some associated plant. Towards the Ghanzi area they were collected in a mixed grassveld of Aristida and Eragrostis species with scattered trees of *Acacia uncinata* and no *Aristida ciliata;* but here another species may have been involved.

222 The European truffles are usually collected with the aid of dogs or pigs, which can trace them by their scent, and rarely by two other methods. One of these is by observing where certain insects collect to lay their eggs, for their larvae feed on truffles and the eggs are laid near them. The other is to watch for cracks in the ground which the truffle sometimes causes as it grows. This is the method used in southern Africa. A good deal of practice is needed before it can be applied, for the cracks are slight, and are specially difficult to find where the surface has been disturbed by game or stock, or where they have been partly filled in by windblown sand, but matters are eased somewhat by the fact that there is seldom more than about three inches of sand covering the truffles and that they grow in patches.

252 They may be eaten boiled or roasted. The texture is like soft cheese.
262 They are not aromatic and the flavour is far inferior to that of the best European truffles.

Ophioglossum sarcophyllum Desv. (5142) Photograph 2.

X137 This unusual looking plant is one of the ferns. It is five inches high on the average, and somewhat fleshy, and consists of an erect stalk with a leaf-like undivided frond at the top. A thinner stalk which bears the spores rises from the mid-rib near the base of this frond.

A few specimens were collected at Gam, on damp sand which was moist from the run-off from adjacent rock outcrops. It is usually found in places like this, where the dampness is conserved, but after good rains its distribution is not restricted, except that it occurs more in the open and does not grow under dense bush. In favourable localities it is sometimes massed, and may be collected in quantity. It occurs throughout southern Africa. 137X

It is used by various Native tribes as a spinach, and may also be eaten raw. It tastes like lettuce but is slightly sweeter and lacks the crisp texture of lettuce. 262

Typha capensis Rohr. (5302) Photograph 3.

Eastern !khũ Bushman dzu-dru

A cosmopolitan and well-known plant, known in South Africa as the bull-rush, and easily recognisable from its inflorescence which forms a compact brown spike two feet or more in length at the tops of the five-foot flowering culms. This is in two parts, variously divided so that the lower may be equal to the upper, or shorter, or longer. The lower part consists of the female flowers and is sausage-shaped and brown, with the flowering culm running through its centre. Immediately above this is a spike of male flowers, similar except that it is more open and often yellowish from the masses of pollen it contains. The leaves are strap-shaped, usually an inch wide and six feet long, erect and fairly rigid and very slightly twisted along their length. It is a gregarious plant and always grows near water. 137X

A little was growing round a permanent spring at the edge of Gautscha Pan, and was the only patch seen during the trip.

The top (male) part of the inflorescence is eaten raw by the Bushmen. 252
It has the rich and familiar flavour of bee-bread. Dinter (1912:17) states 262
that the rhizome of this plant is the thickness of one's finger and about two feet long, and may after drying and husking be beaten to a reddish meal which is rich in starch and may be used in the same way as meal from cereals. I have tried the rhizome myself. It is heavy and succulent when fresh, and loses water slowly. When dry it has a puffy outer zone of tissue which may be stripped off to expose a hard central cylinder containing the reddish starch to which Dinter refers. As the starch does not crumble readily it is difficult to beat out, and it is full of fibres which may however easily be removed by sifting. It may be boiled to make a brown porridge of good quality except that it is more glutinous than any porridge normally used by us.

137X

Mariscus congestus C. B. Cl. (5166) Photograph 4.

Naron Bushman...... n!ani
Eastern !khũ Bushman !gewu

This plant is one of the sedges, a group closely related and similar to the grasses but distinguishable by certain rather subtle differences which most laymen as well as botanists are familiar with. One of the main ones is that their flowering stalks are usually three-angled and solid while those of the grasses are usually round and hollow. The species in question could not, in its withered winter condition, be named in the field, but bulbs which were collected grew well in cultivation and flowered in Pretoria that same

X137 year. They produce an erect and robust plant with bright green leaves and numerous spreading underground rhizomes on which more bulbs are borne a few inches below the surface. Some stolons are produced above ground as well, from among the leaves. They afterwards turn downwards, entering the soil close to the parent plant and thereafter behaving in all respects like the rhizomes. The flowering stalk is three-angled and unjointed, with a cluster of compact, spiky inflorescences at the top, some on slender secondary stalks and some almost sessile. The parent plant is in a sense annual, for both it and the bulb producing it wither at the onset of winter, but the fresh bulbs which have been produced form new plants, and the species is capable of spreading very rapidly by this means. The bulbs are rounded, half an inch in diameter with a sharp point at the top, and covered with several papery brown layers which may be removed to expose a pale nut-like body.

Sedges usually favour damp places, but this species seemed equally at home in seepy areas and well-drained ones, and in the sandy country near Nama Pan it was common nearly everywhere, sometimes scattered among the grasses but more often in patches. Its range is from Cape Town to the Mediterranean, and it occurs in Australia also.

262 The bulbs are edible, and seemed to be a fairly important food of the northern Bushmen. The taste is sweetish and they have a crisp texture and a cloudy, very slightly astringent juice. Light roasting improves
252 222 the flavour. They are easily gathered by scratching away the top layer of soil, and their presence is often shown by the disturbed soil where they grow, for they are a favourite food with many birds and small animals, which scratch and burrow to find them. According to the *Flora Capensis* the plant "has been for nearly a century cultivated in Europe".

X137 *Hyphaene ventricosa* Kirk (5301).

Eastern !khû Bushman !hani and !hɛni

This palm is bushy when young, but loses its bushy habit as it matures, forming a long clean stem 40 feet in height with a crown of leaves at the top and often with a slight swelling near the middle. The leaf has a strong woody rhachis up to six feet long, slightly hollowed above and rounded below, with a row of sharp hooked spines at intervals of an inch or so along each margin. At its tip it bears the leafy part which is two feet across and folded like a fan. The fruits, a little smaller than a tennis-ball, are covered with a glossy brown papery skin, and are borne in clusters.

Old an half-decayed fruits were found in the neighbourhood of Nama Pan, presumably where they had been discarded by Bushmen, but the palm trees themselves were not seen in this area. Only one specimen was found, 20 miles to the north-east. It was immature and had neither flowers nor fruits. According to available records, it was growing near the southern limit of its range, which extends to northern Rhodesia and the Belgian Congo.

262 114 There is a quarter-inch edible mealy layer immediately underlying the skin of the fruit. It is fibrous and dry but sweetish, with a pleasant flavour, and may be gnawed off the hard inner shell into which it merges.
[272] [252] The kernel in the centre of the mature fruit is hard and bony and inedible, but Chapman (1868: II: 73) states that the milk of the young fruit may be used like that of the coconut, and that the whole of the young fruit may " be eaten after boiling, "pulp, rind, and all.

be eaten after boiling, "pulp, rind and all". Dinter (1912:21-22) says 262
also that the Bushmen use the heart of the palm as a green vegetable, and 114
that a sweet sap may be tapped from the upper part of the stem and [273]
fermented to make an alcoholic drink. He gives the yield of fruits from one palm as between 20 and 50 kilograms (48 to 120 lb.). His reference to the heart of the palm is obscure, but Chapman (1868:I:55-56), who is more explicit, says that this is the core of the young trunk.

Aloe rubrolutea Schinz (5135). 137X

Eastern !khũ Bushman n‖ɔru

This species was in full bloom in early August, and made a striking show with its spikes of brick-red flowers. The plants formed rosettes of leaves 12 inches across, producing a slender erect five-foot flowering stalk. Among the hundreds of speciments seen there were none arborescent, although elsewhere arborescent forms are common (Reynolds 1950: 328). Those seen at Nama Pan were similar in habit to *Aloe zebrina.*

Aloe rubrolutea was seen only on the rocky outcrops near Nama Pan and Gam, growing in patches of an acre or so, but it has a wide distribution extending from South West Africa through the Bechuanaland Protectorate to the northern Transvaal and Portuguese East Africa.

The flowers are stripped off the flowering stalk and pounded to make a 252
spinach-like vegetable. Although the Bushmen said that they did not eat 262
the leaves, they were tasted raw and boiled and were found to be juicy and not unpleasant, and to have no harmful effects. They would be a good source of water in an emergency.

Aloe zebrina Bak. (4995). 137X

!hɔ̃: Bushman.....	‖ganja
‖ganakwe Bushman	n‖ɔru
|gikwe Bushman...	n‖uru
Naron Bushman...	n‖ɔru

The plant forms a rosette of rigid dark green leaves which have pale transverse bands and numerous sharp teeth along the margins. It may have a stem 30 centimetres long (Reynolds, 1950: 282), but those seen on the expedition were stemless. The flowering stalks were three or four feet high. The sap in the epidermis of the leaves is greenish-yellow. It oozes out of the vessels fairly quickly if a leaf is cut across, and hardens and changes colour on exposure to the air, becoming brown and glassy. The bulk of the sap, which is in the inner part of the leaf, is colourless and translucent, and does not ooze out if the leaf is cut.

Only one small clump of this Aloe was seen, on deep sand about 80 miles directly south-east of Ghanzi. It is, however, recorded from Angola and South West Africa and across the continent to the east.

The Bushmen stated that the leaves were a good source of water. One 262
of these plants was sent to Pretoria and grew well in cultivation. On being 312
tested, the leaves proved extremely unpleasant, not because of any bad 824
taste but because their sap is in the form of a thick, revolting slime. Boiling or roasting did nothing towards making them more palatable. Either the Bushmen were confusing this Aloe with another species, or it

262 271 824 [114] is eaten only when they are in the greatest need. Reynolds (1950: 285), quoting W. B. Hooker, states that its flowers may be eaten after boiling, but I did not think of asking the Bushmen about this, and they did not volunteer any information.

X137 *Dipcadi* sp. (5163, 5307).

!hɔ̃: Bushman........	n!ɦɔm
Naron Bushman......	n!ɔm
Eastern !khũ Bushman	n!um ʃé:

Although the above-ground parts had been killed by frost, enough remained for the plant to be identified as a species of Dipcadi. The bulbs were two inches below the surface of the soil, in appearance like a small onion. They were planted in Pretoria, but although they were still alive two years after being collected, they had failed to produce leaves or flowers up to the time this report was written.

Specimens were collected at Nama Pan, in parkland on sandy soil. As the plant was recognised and named by one of the southern !hɔ̃: Bushmen who was with us, it probably extends into the Kalahari well south of Ghanzi.

[262] The bulbs are edible after cooking.

Scilla sp. near *Scilla lancifolia* Bak. (5190) Photograph 5.

Eastern !khũ Bushman	tũ

This plant has a rounded two-inch bulb covered with a thick layer of dark brown papery scales. In the summer it produces three or four spreading leaves, usually six inches long but up to 10, and one and a half inches wide at the widest part. They are thin but fleshy, strap-shaped (but in section widely V-shaped near the base), and light green, sometimes faintly mottled with darker green. The inflorescence is four inches long and the flowers small and not conspicuous, with purple stamens and a recurved perianth.

It was common in shallow sand overlying rock near Gautscha Pan and Nama Pan but was not easy to find because the leaves and inflorescences had been frosted, and blown away by the wind by the time the expedition had reached those parts. A number of bulbs collected there produced leaves and flowers in Pretoria the following summer, and it was from these plants that the notes were made.

[252 262] The bulb is edible after roasting but I have not tried it personally.

It would be dangerous to experiment with plants like this if what the Bushmen say is true, for it could be easily confused with another species which has an inedible bulb. The inedible species (No. 5181) is shown in photograph 6 and may be distinguished by its longer bulb and longer leaves (10 inches long and over, and two inches wide at the widest part). They have a translucent fringed margin, are pointed, narrowly V-shaped in section and more numerous, about 12 to a plant. In addition, the μ137 Two storage organs of this plant were found by the Bushmen near Nama Pan in August 1955. They lay dormant for a further 16 months after being planted in Pretoria, then both plants grew out and flowered within a few weeks of each other. The parts above ground disappear during the winter for they are very susceptible to frost.

[262] The storage organ is edible. It has a pasty texture and little taste if [252] eaten raw, but is improved by baking.

Eulophia sp. nearest *E. pillansii* Bol. (5279, 5304) Photograph 9.

Eastern !khũ Bushman ≠gɔʔɔ

An erect stemless plant with four or five spreading glabrous grass-like leaves half an inch wide and 11 inches long, prominently three-keeled on the back and grooved above, and fairly soft and lax. They rise in tufts, each one from a corm the size and shape of a slightly flattened golf ball with "eyes" on the upper surface and short stout roots below. The corms have a brown skin covering a white fairly firm flesh. They are often linked together five or six at a time, and are to be found an inch or two below the sand. The above-ground parts die back during the winter and usually disappear without trace before the next season's growth begins. The plant flowers after the new leaves appear and has the flowers arranged alternately in an open inflorescence at the end of a 12-inch flowering stalk. They are yellow and green, and about half an inch long.

A few corms were found by chance in two places near Nama Pan, in the shelter of small thickets. They flowered in Pretoria but could not be matched with any of the named specimens in the National Herbarium and the species may be undescribed.

[252] The corms are edible raw or roasted. They were peppery when tasted [262] in Pretoria, probably because they had been planted too near the surface and had become green through the action of the light. At Nama Pan they were mild and tasteless with a pasty texture.

Eulophia sp. (5213, 5306) Photograph 10.

Eastern !khũ Bushman ≠gawu

The corms of this orchid are a little bigger and coarser than those of the other species of Eulophia (numbers 5279 and 5304) but are otherwise similar. The leaves are erect, somewhat curved, eight inches long and slightly more than half an inch wide, pale yellowish-green, rigid and firmly fleshy, with a channel running down the upper surface and a corresponding keel on the lower surface. This plant grew well but did not flower in cultivation in Pretoria and the species has not been determined.

It was found in the same locality as the other Eulophia and under similar conditions.

[262] The corms of the two species are used in the same way by the Bushmen, and cannot be distinguished by taste or texture.

Ximenia americana L. var. *microphylla* Welw. ex Oliv. (5061) Photograph 11.

!hɔ̃: Bushman........	n≠ʔuri
‖ganakwe Bushman...	n≠ʔuri
|gikwe Bushman......	≠ɔʔi
Naron Bushman.......	n≠ʔuri

Very like the following species (*Ximenia caffra*), but except for the flowers glabrous throughout and with smaller glaucous leaves which tend to fold along the midrib and droop, giving it a rather unattractive look. Its fruits are lighter in colour, and smaller. The two species were often found growing together, but no evidence of hybridisation was seen.

X137 place being taken by a few thick fleshy erect lobes, and from the woody remnants of old flowers in this particular species it could be seen that they had four lobes. The two species recorded from South West Africa are *Hydnora africana* and *Hydnora solmsiana*, parasitic respectively on species of Euphorbia and species of Acacia. Number 5162 is either a new species, or one of the known ones parasitic on a hitherto unrecorded host. The material collected was inadequate for specific determination, and the seeds which were planted did not germinate.

This Hydnora was seen only in the immediate neighbourhood of Nama Pan, where it appeared to be fairly frequent.

The host plant is a straggly shrub up to six feet high, with grayish woolly leaves an inch long. It has the characteristic four-winged fruits of the genus, and many remain on the twigs through the winter. It was not seen in the country to the south of Ghanzi, but was common from Ghanzi northwards, and is widely distributed in Portuguese East Africa, the Transvaal and Rhodesia. A glossy-leafed form of it is also known, but was not seen along the route of the expedition.

[262] The whole mass inside the Hydnora fruit is edible. It is astringent and slightly sweet, and is eaten raw. The fruits would be difficult to find if it were not that they are eaten by various animals. A litter of [222 half-eaten fruits and fragments of rind and shallow burrowings often 824] show where the fruits have been excavated, and where more may be expected. They ripen about the end of August.

Talinum arnotii Hook. f. (5256) Photograph 14.

Eastern !khũ Bushman ‚‖gwi_ja (stems and leaves)
≠k″arɔ (tuber)

During the winter there is seldom any sign of this plant above ground for the branches wither and die back with the first frosts. There is a perennial tuber a few inches underground, irregularly shaped and up to a pound in weight, crisp in texture and exuding a little cloudy astringent juice when injured. It has a brown skin and a reddish-brown zoned flesh. Although it is often eaten into hollows, presumably by rodents and insects, it is not eaten by the Bushmen. The stems appear in September and form a loose mat three feet in diameter on the surface of the ground. They are reddish-brown, prostrate and sappy, and the leaves are dull green and fleshy, channelled down the centre on the upper surface and with slightly crystalline appearance. The bright yellow flowers, which are produced in midsummer, are an inch across and quite showy, but open only in the heat of the day. They have two sepals and five petals. The flower-stalk starts bending when the flowers are mature, and by the time the fruits are fully formed it is curved sharply back. The fruits are the size of a small pea, shiny green and pointed at the tip, and covered by the withered remains of the perianth. They become yellow when ripe, with a papery shell and seeds the size of a pinhead.

The tubers of this plant were often unearthed in the more open parts round Nama Pan. I am doubtful whether it should be kept separate from *Talinum caffrum*, which is distributed from the Cape Province northwards to the Sudan and is very variable in its leaves and habit.

[262] The leaves and smaller branches of this species are used by the [252] Bushmen as a green vegetable. They are usually prepared by being pounded in a mortar to a paste which is dark green and slightly slimy and has a faintly acid taste with a flavour of lettuce.

Pollichia campestris Ait. (4963, 5040) Photograph 15. 137x

A small grey-green bush with much-branched slender soft stems, fairly compact when growing in the open but usually found as a semi-scrambler up to four feet high. The leaves arise in tufts of about three, the tufts being opposite each other and at intervals of anything up to an inch along the stem. They are lanceolate and usually under half an inch long. The plant bears what at first sight appear to be fleshy translucent fruits like small white or yellowish mulberries, but which are actually parts of the flowers.

This is a widespread plant throughout Africa, and was seen at intervals all along the route taken by the expedition.

The fleshy parts of the flowers are edible and sweet, with a queer earthy flavour, and are loosely attached so that they may be easily collected by pulling the stems through the hands. The plant, however, did not appear common enough to be of importance as a food. [262]

Boscia albitrunca (Burch.) Gilg and Benedict (4998, 5208) Photograph 16.

!hɔ: Bushman........	≠hun
ǁganakwe Bushman...	n|ßu-ni
|gikwe Bushman......	n|ßu-ni
Naron Bushman......	n|ßu-ni
Eastern !khũ Bushman	zã

This is a rather variable tree, sometimes with erect branches and sometimes with a spreading crown, usually bearing many thin twigs with much dead wood among them. The bark is sometimes loose, dark and coarsely fissured and sometimes white and flaky. The species was also often seen in the form of a many-stemmed shrub about four feet high. It is evergreen, and did not seem to be at all affected by the heavy frosts that were experienced in the central Kalahari. The leaves arise singly or in bunches of four or five from small knobs on the twigs, and are leathery and about one inch long and a third as wide. Although the flowers are small and inconspicuous as individuals, they are borne in masses towards the tips of the twigs and make quite a show. In the Cape and the Transvaal at least the tree appears to be sporadic in its flowering. The fruits are borne on half-inch jointed stalks, and are half an inch in diameter, pale-skinned and translucent, with several large stones surrounded by a thin, watery pulp.

The tree was scattered evenly throughout the country from Molepolole to Ghanzi and Gautscha Pan, and has been recorded from the Cape Province northwards to the tropics. It occurred singly, occasionally in open communities, but it was never seen to form thickets.

The fruits are eaten by the Bushmen, but they do not make pleasant eating, for the pulp has a rather slimy texture and a sickly-sweet taste. [262]

Sim (1907:123) refers to a meal which is prepared from the roots by drying and beating them. [252] The resulting meal is then sifted to remove the fibres and may be made into a porridge. There are reports of gastro-intestinal disturbances after the eating of Boscia roots, but the reports have not been confirmed, and Steyn (1934: 561) fed large quantities to a rabbit without ill effects. It is suspected that people are susceptible only when they are not accustomed to this food. The Bushmen were not asked about their use of the roots, and did not volunteer any information. [114 124]

The older trees are often hollow, and form natural reservoirs for rain water which is tapped by the Bushmen. (See Adansonia.) 312 824

Acacia species.

X137 [262] The species of Acacia mentioned in this paper often exude edible gum from injuries on the stem. It is a safe assumption that the gum from species that are not mentioned would also be edible, for none are known to be poisonous. All African species have alternate bipinnate leaves of the pattern shown in the photograph of *Acacia heteracantha*, and all are thorny.

Acacia detinens Burch. (4947, 5070, 5206).

!h5: Bushman........	||wa
||ganakwe Bushman...	||wa
|gikwe Bushman......	||k'uwa
Naron Bushman......	||wa
Eastern !khõ Bushman	!gõõ

A rigid shrub usually seven or eight feet high, with a smooth dark bark and paired hooked thorns a quarter of an inch long. It makes a bright show towards the end of August, for it is deciduous and the flowers appear in profusion before the new spring leaves. The flowers are scented and creamy, and massed in round heads up to half an inch across. The pods are flat and papery, two inches long and half an inch wide.

This was the most widespread of all the Acacias seen on the expedition, and was scattered all along the route. It is found in the northern Cape Province, the northern Transvaal, the Bechuanaland Protectorate, South West Africa, Angola, and Northern and Southern Rhodesia.

[262] It produces an edible gum.

Acacia dulcis Marl. and Engl. (5042).

A semi-deciduous tree usually about 25 feet high, with a number of erect three-inch stems arising from a common rootstock, and with a pale papery bark which has a tendency to peal. The thorns are paired and strongly hooked, a quarter of an inch long, stout, sharp and numerous. The flowers are borne in pale yellow spikes, and the pods which follow are flat and papery.

Only a few specimens were seen along the route of the expedition, all of them within a radius of 40 miles or so of Ghanzi. The tree occurs in the north-eastern Transvaal, the northern Cape Province, the Bechuanaland Protectorate, South West Africa, Angola and Nyasaland.

[262] Its gum is said to be of a particularly good quality.

Acacia fleckii Schinz (4943, 5067, 5205).

Eastern !khõ Bushman	n≠ŋ

A semi-deciduous shrub from six to eight feet high, very similar to *Acacia dulcis*, with the same pale flaky bark and hooked thorns and the same type of flower and pod, but with a different habit and usually finer leaflets.

Except between the Mabeleapudi hills and Tsau, where it was not noted, it was plentiful all along the route of the expedition. Its range is from the northern Transvaal through the Bechuanaland Protectorate and South West Africa to Angola.

[262] It produces an edible gum.

137X

Acacia giraffae Burch. (4945, 5069).

Eastern !khũ Bushman |ana

A tree, usually erect, with an umbrella-shaped crown and grayish foliage, darker green in the spring. Recognition is made easy by the gray woody pods, which are velvety on the surface and the size and shape of a flattened kidney, and which are to be found on and around the tree at all seasons. The flowers, which begin to appear in September, are scented and borne in small bright yellow heads, and the thorns are in pairs and stout. The bark is gray and fissured, and the crown rather dense, with much dead twiggy wood in it.

This tree was found all along the route between Molepolole and Gautscha Pan. As a rule it was scattered, but in one area, between Lake Ngami in the south and Tsau in the north, along the border of the Okavango swamps, it was the dominant tree. Some magnificent old specimens up to 30 feet in height were seen here. On the heavy sand between Molepolole and Ghanzi, however, it often occurred in the form of a shrub about six feet high. It is known from the northern Cape Province, the Orange Free State, the Transvaal, the Bechuanaland Protectorate, South West Africa and Angola.

Its gum is edible, slightly astringent but quite good to eat when fresh and clear. It becomes discoloured at times and is then less palatable. [262]

Acacia heteracantha Burch. (5341) Photograph 17.

Eastern !khũ Bushman |gali

This tree usually has an umbrella-shaped or flat crown and a delicate lacy appearance because of its slender twigs and fine leaflets. The flowers are borne in round white heads and produce small clusters of tightly curled pods. Like *Acacia uncinata* it has straight as well as hooked thorns.

It has been recorded from South West Africa, the Bechuanaland Protectorate and the northern parts of all four provinces of the Union, and extends as far north as Tanganyika, yet in spite of this wide distribution it was not seen between Molepolole and the Ghanzi area. There is at present no explanation for this strange gap in the centre of its distribution.

It produces an edible gum. [262]

Acacia uncinata Engl. (4950).

!hɔ: Bushman........	!ɔla
‖ganakwe Bushman...	’!ũ
|gikwe Bushman......	’!ũ
Naron Bushman......	’‖gũ
Eastern !khũ Bushman	’!gũ

A spreading 20 foot high tree, with a fissured bark and paired thorns, some of them straight and slender but most short and hooked. In this it resembles *Acacia heteracantha*, but its pods are straight and not curly as those of *Acacia heteracantha* are, and it is a stouter tree. The flowers are borne in round yellow heads half an inch in diameter.

There was no commoner Acacia than this from Molepolole to the Ghanzi area, but north of Ghanzi it became scarcer, and patchy in its distribution. It extends from the northern Cape Province through South West Africa and the Bechuanaland Protcetorate to Angola.

[262] 411 824 It furnishes the Bushmen not only with an edible gum, but also with the material for making quivers. These are made from the lateral roots, which are a foot or so below the surface. A suitably straight length is exposed and cut through, and after the cortex has been loosened by gently pounding it, it may be slipped off the woody central portion. The tube so obtained is then covered at one end with skin. The roots of this tree, like those of *Acacia giraffae*, have a most unpleasant smell when cut, something which is not apparent in the above-ground parts.

X137 ***Burkea africana* Hook. (5332) Photograph 18.**

Eastern |khũ Bushman -|k'u

An evergreen tree, with attractive drooping grayish compound leaves which are silvery when young. The tips of the youngest twigs are covered with a dense reddish pubescence, but this soon wears off and the older branches and the stem have a dark brown rough bark. The flowers are small but massed in showy hanging spikes six inches long and as thick as a pencil. They are cream-coloured and scented, and produce flat one-seeded or two-seeded pods two inches long. In the Transvaal the tree has a spreading crown. Beyond Tsau the habit was very different—the branches were ascending and shorter and gave the tree a slender appearance almost like a Lombardy poplar.

It is a widespread species in tropical Africa, extending from the Magaliesberg northwards to Abyssinia and Nigeria (Codd, 1951:61). Along the route of the expedition it was scattered from the south up to a point 171 miles from Molepolole, after which it was not seen again until 65 miles north-west of Tsau. It was found only on heavy sand, and beyond Tsau where sand and hard soil sometimes alternated at intervals of a mile or so the corresponding zones of Burkea were sharply defined. The central gap in its distribution is probably a climatic one, for there was deep sand in this area and conditions were apparently ideal for Burkea.

136 262 Burkea occasionally produces a little edible gum from injuries, but it is more important indirectly because of being the host of at least two edible caterpillars, one being the larva of the moth *Nudaurelia bellina* Westwood. This caterpillar is in length and thickness slightly bigger than one's little finger. It is marked with black dots on a yellowish-green ground, with a black transverse band just below each segment and a row of stiff black bristles on each segment. It is recorded from South West Africa and is no doubt known to the Bushmen and eaten by them, but as the expedition passed through those parts too early in the season no specimens of the caterpillar were seen. The Bushmen did bring in the pupae of what they said was an edible caterpillar, and Mr. L. Vari of the Transvaal Museum was unable to distinguish them from the pupae of *Nudaurelia bellina*. One cannot, however, assume from this that they are in fact the same, for the pupae of different species in this group may be indistinguishable.

136 Another caterpillar found on Burkea and recorded also from South West Africa is the larva of the moth *Cirina forda* Westwood. It is black below and silvery or golden yellow above, with a line of black markings down the centre of the back. It is sparsely covered with long white hairs. Many other species of caterpillars have similar hairs which are extremely irritant, but these are quite harmless.

The following observations were made in the Transvaal near Pretoria, 252
where infestation by *Cirina forda* is frequently so heavy that the affected trees may be readily recognised from a distance from the way in which the leaves are stripped. The caterpillar is prepared for food by being grasped by the head and squeezed through the thumb and forefinger of the free hand with a milking action. This clears out the bowel contents, and no further preparation is necessary before the boiling which follows. The head is rather hard and may be removed, but this is not necessary. After light boiling or roasting the caterpillars are dried in the sun and [251]
may be stored without deteriorating for several months. They are slightly oily but crisp in texture, with the smell and flavour of kippers.

Bauhinia esculenta Burch. (5160) Photographs 19 and 20. 137X

Eastern !khũ Bushman tsi: (the seed)
n||ŋ (the storage organ)

This plant is a runner in open grassveld, with numerous slender vines up to 18 feet long, the youngest parts of them covered with a fine brown tomentum. They bear inch-long Y-shaped tendrils, but the plant is not a climber. The vines die back during the winter but do not disintegrate as readily as those of the Cucurbitaceae, and are conspicuous until the new runners are produced from the perennial underground stem. The leaves, which are soft and reddish-brown when young but turn leathery and glaucous as they grow older, are deeply bilobed, with a small spur between the lobes. The plant bears showy yellow flowers in December, and the pods ripen from April onwards. At first they are soft and reddish brown, then light green and, when ripe, brown and woody. They contain up to six flattened seeds about the size of one's thumb nail, consisting of a hard shell and a soft nutty edible inner part. The plant is easily seen because of the craters it forms where the soil is stony—craters a yard or more across, edged with a ring of stones which appear to have been forced to the surface by the stem beneath. The details of this crater formation, however, are not known.

This Bauhinia is curiously patchy in its distribution. Although it is plentiful in some places near Vryburg, it was not seen along the route of the expedition until a point 400 miles north of Vryburg, that is, 127 miles before Ghanzi was reached, and I have no record of it after leaving the Ghanzi area until the expedition crossed the border into South West Africa near Gam, after which it was again plentiful. It occurs in communities sometimes miles across, with the plants in these communities scattered 20 to 30 yards apart. On the expedition it was seen growing only on deep sand or where there were outcrops of limestone, and near Pretoria it has so far been seen only on the dolomite, but it has been grown successfully in Pretoria on neutral shaly soils. It has been recorded from the northern Cape Province, the western Transvaal, the Bechuanaland Protectorate and South West Africa.

Although the seeds are not pleasant to eat when raw, they are excellent 262
after roasting, and analysis figures show that they are rich in protein and 252
oil. The roasting should be carried out slowly, otherwise they may 146
shatter with a rather disconcerting report, and to avoid this they are often roasted in sand, which probably gives a slower and more even heat. They may also be boiled to make a porridge or a drink. They will last through the winter in the field without spoiling but become scarce towards the spring, probably through being covered with wind-blown sand and being eaten by animals.

262
252
(222) The sappy young tuber makes a good vegetable after baking or boiling. Those dug up by the Bushmen were about two pounds in weight and would not have been more than a few seasons old, for it is known from specimens grown from seed in Pretoria that it takes about ten years for them to reach 30 pounds. Burchell (1824: 589) says that they are astringent, but on tasting the 30-pound one mentioned I did not find it so. It was, however, rather tough and leathery.

With breeding, this might become a useful plant of cultivation.

X137 *Bauhinia macrantha* Oliv. (4887) Photograph 21.

!hɔ̃: Bushman.......	;intɛ
ǁganakwe Bushman...	n|an|hɛ
!gikwe Bushman......	n≠an≠ɛ
Naron Bushman......	n≠i≠ei
Eastern !khũ Bushman	≠ŋ≠wa

This species is usually a rigid three-foot shrub, but grows up to six feet where protected from fire and is sometimes found as a weak scrambler with stems up to 12 feet in length. Dinter (1912; 28) records one in the form of a tree five metres high, but this is quite exceptional. It has thin rather wiry twigs, some slightly curled at the tips, and alternate bilobed leaves which are shed during the winter. The younger parts are minutely hairy, but soon become glabrous. The flowers are borne at the tips of the twigs and are pure white and showy, with a pleasant scent and crisped petals. The pods are four inches long and one inch broad and contain five or six irregularly-shaped flattened beans.

Bauhinia macrantha has been recorded from near Molepolole, but is probably localised or uncommon there, for on the expedition it was first seen 60 miles northwest of Molepolole. From there on it was common, although there were occasional gaps in its distribution. It forms communities in open sandy grassy country, usually with the tips of the bushes just showing above the grasses, and has been recorded from the Transvaal, the Bechuanaland Protectorate, South West Africa, Rhodesia and Angola. It has grown well as a cultivated ornamental shrub as far south as Grahamstown.

252
262 The ripe beans are extracted from the pods, roasted peeled and pounded into a pleasant-tasting coarse rather gritty meal, edible without further preparation. The beans may also be used when they are green, but then it is more convenient to roast the whole pod so that it can more easily be opened. They are not eaten raw, for unless cooked they have a burning taste. The pods are easily opened when mature by bending them across the middle, when the two halves spring apart. The halves form spirals as they dry.

The importance of this species as a food plant was shown by the heaps of empty pods which were found at many Bushman shelters and Bakalahari villages. There is, however, a great deal of labour involved in preparing the meal, because although the beans have a thin shell and are thus easy to crack, it still takes about 1,500 of them to produce a pound of air-dry meal.

A note on one of Schoenfelder's specimens in the National Herbarium states that the root is also edible when roasted.

Like *Bauhinia esculenta*, this might be a useful cultivated plant if improved by breeding.

137X

Vigna dinteri Harms (5227, 5310) Photograph 22.

!hɔ: Bushman........	|iti
Naron Bushman......	|iti
Eastern !khû Bushman	ʃa:

A leafy twiner which climbs through trees and shrubs to a height of six feet or so. It produces numerous slender stems like a runner bean, and the leaves too are similar, being alternate and made up of three pointed and often lobed leaflets two inches long and half as broad. The terminal leaflet has a stalk over a quarter of an inch long, but the side leaflets are very shortly stalked. There are two narrowly triangular stipules where the leaf-stalk joins the stem, an eighth of an inch long and fixed at the base. The whole plant is finely hairy, but less so on the upper surface of the leaves than on the lower. The flowers are also like those of the runner bean, creamy to brownish-yellow, and are borne several at a time on a stalk up to five inches long. The pods are three inches long, circular in section and less than a quarter of an inch in diameter, and the seeds are bean-shaped but small, the size of a match-head. On a branching system of roots nine inches below the surface of the soil are borne swellings the size of potatoes, but more regular in outline and without the lobing which is so common with potatoes. In shape they vary from spherical through ovoid to long and only slightly thickened, and arise apparently in no particular order, for very small ones and large ones may be found next to one another on the same root, the spacing between them ranging from a fraction of an inch to a foot. The axis of the root (which is usually a little less than a quarter of an inch thick) passes through the centre of the swellings. As the plants were seen during the winter, there was very little remaining of the leaves and stems, and I have no information as to their frequency. Only two specimens were found, both in the neighbourhood of Nama Pan, and both in fairly thick mixed scrub in sand. Because of their habit of growth, it is unlikely that they would be found in open grasslands. The root swellings were planted in Pretoria and produced vigorous plants which flowered and set seed normally. The swellings themselves, however, were found to have been heavily infested with eelworm in their new habitat, and when they were replanted no further plants were produced.

Vigna dinteri has seldom been collected, and, as far as I know, only in South West Africa, though it is very likely that it extends into Angola and the Bechuanaland Protectorate as well. The fact that it is known to the !hɔ: Bushmen indicates that it may extend into the central Kalahari.

The swellings on the roots are edible raw or cooked, and are a pleasant and satisfying food. When raw they have a flavour which has been likened to that of grean beans. This is fainter after cooking. [262] [252]

It would be worth while investigating this plant with a view to bringing it into cultivation.

Vigna triloba Walp. (5257).

Eastern !khû Bushman	ga-ni

Although occasionally reported as a trailer in grasslands, the more usual form of this plant is a twiner very similar in habit to *Vigna dinteri*. It has the same type of trifoliolate leaf as well, but the leaflets may vary widely in different plants, being simple or lobed, hairy or almost glabrous, sometimes long and narrow and sometimes almost as broad [illegible] they are long. Some of the forms would be indistinguishable vegetatively from *Vigna dinteri* if it were not for a difference in the stipules. In *Vigna* x137 *triloba* they are what is known as dorsifixed, that is they are fixed a little way up from the base so that the stipule is free at both ends. The flowers are the same size in the two species and have the same long stalk, but those of *Vigna triloba* are predominantly purple. They tend to open in the early morning and to close during the heat of the day.

Vigna triloba is reported from a variety of soils and is widespread through southern Africa, but it was not seen on the expedition until the Nama Pan area was reached.

262 [252] It has a finger-thick tap-root which is edible after boiling or roasting, although fibrous and slightly bitter. In mature plants it may extend downwards further than can conveniently be dug, but it is easily broken off. There appear to have been no previous records of its use as a food plant.

x137 *Commiphora pyracanthoides* Engl. (5137) Photograph 23.

Eastern !khû Bushman n|ɦɔ

A deciduous, rigid, twiggy two-foot shrub with spine-tipped twigs, branches that curve downwards, and a bark that is pale green and flaky on the older parts and grayish on the young twigs. The flowers are less than a quarter of an inch long and inconspicuous, and are borne in bunches on small knobs scattered along the twigs. Male and female flowers are on separate plants. The knobs also bear the leaves, which appear after the flowers and are glaucous, simple and finely serrate, and about three quarters of an inch long and half an inch wide. The fruits are "ovoid, about the size of a green pea, though reddish brown when ripe. When the fruits are ripe, the fleshy covering may be easily split apart in two halves exposing the black seed with a red aril covering it partly at the base and extending in four slender 'fingers', producing an intriguing pattern". (Codd, 1951:87.)

The species extends from South West Africa to the northern Transvaal, but was uncommon in the area round Nama Pan. One specimen collected there was grown in Pretoria. Leaves and flowers were obtained in the summer following, and from this material the determination was made possible.

[262] 312 824 The plant exudes an edible gum from injuries and is a useful source of water in an emergency, the water being in a sappy underground organ which is like that of one of the following species of Commiphora, No. 4994. It is known as a water plant among the Bantu of the Transvaal as well.

x137 *Commiphora* spp. (4994 edible, 5030 inedible).

4994	
!hɔ̃: Bushman..	dʒã
|gikwe Bushman	dʒã
Naron Bushman	|uri

5030	
|gikwe Bushman	!ana

Two species of Commiphora were collected in the Kalahari south of Ghanzi. They were completely deciduous rigid two-foot shrubs with many sharply-tipped twigs and a flaky bark. At first sight they were identical, and even close examination revealed no bigger difference than that one of them was a little more of a thicket than the other and slightly grayer. The Bushmen, however, stated emphatically that the grayish one was poisonous and the other not. They said also that the grayish one

8.24 [278] [825]

WAS THE HOST OF THE INSECT WHICH THEY USE FOR MAKING THEIR ARROW POISON, AND THAT IT HAD HARDER ROOTS THAN THE OTHER.

was the host of the insect which they use for making their arrow poison, 824 and that it had harder roots than the other. The fruits, flowers and leaves might have shown the difference clearly, but no trace of them could be found, and though plants were sent to the Transvaal for growing they failed to become established.

In spite of its unpromising appearance, the non-poisonous one is a 312 useful source of water. This is in a sappy unbranched vertical underground 824 part about an inch and a half thick. The Bushmen excavate down its [222] length as deeply as they can reach, then break it off and withdraw it. They remove the thin outer skin and chew the remaining part, which is [271] crisp and has a little tasteless sap. As a source of water it does not compare with the various species of Cucurbitaceae—weight for weight it contains far less, and the labour of digging it up is considerable. However, it must be a reliable standby when the Cucurbitaceae are not in fruit, and in the central Kalahari it is plentiful. In the southern part it is apparently absent, for it was not seen until 256 miles north-west of Molepolole.

Dichapetalum cymosum (Hook.) Engl. 5109, 5266, 5338 Photograph 24. 137X

Eastern !khũ Bushman ma-l

This plant produces a number of slender erect woody stems up to 12 inches high, sparingly branched and often buried in the sand at the base. The leaves are four inches long, numerous, sessile, alternate, broader in the upper half where they are about one and a half inches across, and tapering at the base, with a stiff papery texture and with veins prominent above and below. They have a slight bloom on the upper surface and the younger leaves at least have a pair of narrow hairy stipules at the base. The younger parts of the plant are hairy, but the hairs wear off with age, and during the winter the leaves turn brown and hard and finally drop. The flowers are scented and have white petals forked at the end, but as they are small and nearly covered by the sepals, they are not conspicuous. The fruits are like a loquat, and may be brown or yellow. The have one or two big seeds covered by a little flesh.

Dichapetalum is distributed widely but patchily from the northern Transvaal through to Angola and Rhodesia. On the expedition it was seen for the first time between Tsau and Kaikai, and beyond that it was fairly frequent but scattered. It was usually in open situations, and seldom where there was dense tree growth.

Though the leaves are extremely poisonous, the flesh of the fruits 262 is harmless and is eaten by the Bushmen. They emphasised that the flesh only could be used, and that the stone was poisonous. They did not mention the skin, but the following note on Schoenfelder's specimen 31, in the National Herbarium, indicates that it, too, is poisonous:—

> "Fruits like small yellow oranges are eaten peeled in great quantities by the Kung Bushmen. When still green can be eaten [252] after baking in hot ash. Used like fruit, fresh. The peel of the [278] fruit is stamped and mixed with other food to poison stealing dogs 824] (Diriko)."

Marloth (1913-25: II: I: 120) and Engler (1912: 577) also refer to the edibility of the fruits.

There are four other plants of very similar appearance which could 137X be confused with *Dichapetalum cymosum*, and although they were not collected on the expedition, their distribution does overlap. They are *Pachystigma pygmaeum*, *Pygmaeothamnus zeyheri*, *Parinari capense* and *Diospyros chamaethamnus*. The first two bear inedible fruits and may be

X137 [262] distinguished by their having opposite leaves. The latter two bear edible fruits and like *Dichapetalum* have alternate leaves. The differences are that *Parinari capense* has leaves dark green above and covered with a white felt below, and that *Diospyros chamaethamnus* has no stipules.

Another species, *Dichapetalum venenatum*, has been described, but is in my opinion not specifically distinct from *Dichapetalum cymosum*.

Ricinodendron rautanenii Schinz (5336) Photograph 25.

Eastern !khũ Bushman ‚||kʺa:

The trees seen on the expedition were about 25 feet high and were then (at the end of August) quite bare, resembling slender baobabs, with similar but thinner stems, and smooth bark and stubby branches. Specimens collected elsewhere showed that the leaves are digitately compound, with about five leaflets and two prominent green glands at the top of the leaf-stalk. They are dark green above and pale below and covered with a pale to brownish powdery wool which is found on the young twigs and fruits also. The trees are either male or female. The small creamy flowers are borne in bunches towards the tips of the twigs and the female flowers give rise to reddish fruits the size of a small plum, consisting of a thin pulp surrounding a very hard nut. This is light coloured like an almond, thick and strong and marked all over with numerous small pores.

The only trees seen were on heavy sand near the banks of the Eiseb omuramba, 29 miles from Gam on the way to Windhoek, where they were dominant in a belt several miles wide. They formed a woodland, with the trees spaced about 25 yards apart. Herbarium records show that this is the usual mode of occurrence. The species has been recorded from South West Africa, the Bechuanaland Protectorate, Rhodesia and Portuguese East Africa.

252 262 The pulp of the fruit is edible raw or stewed. It does not readily go bad, but in time it dries and shrivels and in this condition, turned hard and crumbly, is still a wholesome food, edible raw or cooked. The stone contains one or two firm white-fleshed kernels which are, like the pulp, edible raw or cooked. The tree is an important source of Bushman food because of the quality and quantity of its fruit and because the fruits remain good for a long time even without being stored. Those seen on the expedition were on the ground beneath the trees and were still perfectly [312 824] good to eat. The tree is additionally useful in that it sometimes collects and holds rain water in hollows in its trunk (see Adansonia).

X137 *Sclerocarya caffra* Sond. (5292) Photograph 26.

Eastern !khũ Bushman -gai

A few mature specimens were seen, about 20 feet high, and a few young ones. The mature trees had a single clean bole with a flaking bark and a branching rounded crown, and were very different in appearance from the young ones which consisted of four or five thick and sappy unbranched stems about five feet high, with a smooth brown bark. This was in August, and all were quite leafless. The following description is taken from Codd (1951): — "The leaves are pinnate with three or four pairs of well-spaced leaflets and a terminal leaflet. The leaflets are oval, smooth, tapering to an abrupt point and are about one and a half inches long and one inch wide. Flowers are inconspicuous and are produced in small sprays just before the appearance of the young leaves, some trees being predominantly male and others mainly fruit-bearing. The edible fruits are somewhat oblong in shape about the size of a small plum, consisting of a firm skin, pale yellow when ripe, enclosing a large hard kernel, to which adheres a soft whitish, fibrous flesh, with a sweet-acid refreshing flavour." 137X

These trees are recorded from tropical Africa southwards as far as Pretoria and Natal, but they were not seen along the route of the expedition south of Nama Pan. They were growing in sandy soil in fairly thick mixed bush.

Sclerocarya is well known as a wild fruit-tree throughout this range, 262 and the fruits are eaten by many different animals as well as by man. They fall when still immature, but ripen quickly on the ground and become strongly aromatic. The Bushmen make use of the fruit after the pulp has been eaten or has rotted away, for the stone which remains contains a little oily flesh with a pleasant nutty flavour. However, as the stone is very hard and makes up 90 per cent of the whole, the labour involved in smashing it and extracting the flesh is considerable. The Imperial Institute, which investigated the stones to see whether the oil could be produced on a commercial scale, concluded that such a scheme would not be worth while.

Lannea edulis (Sond.) Engl. var. *glabrescens* Engl. (5185) Photograph 27. 137X

Eastern !khũ Bushman gaga-ʃe

A plant with a thick underground trunk, from the crown of which arise a number of thin stems a few inches high, bearing 12-inch compound leaves. The leaves seen in the field had all been killed by frost but had not fallen although it was at the end of winter. They had a stiff, papery texture and appeared completely glabrous to the naked eye, but a few stellate hairs could be seen along the veins when the leaf was put under the lens. The following notes on the fruits are taken from the pamphlet by Verdoorn (1938:22):— "The ovary has four erect styles the remains of which can be seen as four little points on the mature fruits. The fruit which is only about half an inch long, is scarlet until it ripens, at which stage it turns purplish black. There is only a small amount of flesh but it is juicy and pleasantly sour. The stone is just over a quarter of an inch long, oblong and laterally compressed with the surface somewhat pitted."

One specimen was found during the expedition, growing in open woodland on sandy soil near Nama Pan, but the Bushmen stated that it becomes more frequent towards the north. It is widespread through the northern Transvaal and occurs in Southern and Northern Rhodesia as well as the Bechuanaland Protectorate and South West Africa. The glabrous form is rarer than the form with hairy leaves.

It is quite well known throughout its range because of its edible [262] fruits, but it appears to be a rather sporadic bearer.

Rhus commiphoroides Engl. and Gilg (4889).

A semi-deciduous spreading shrub up to six feet in height with rigid branches and downy twigs, many of them spine-tipped. The leaves, which are also downy on both surfaces, are borne on a stalk a third of an inch long and consist of three obovate leaflets, toothed in the upper half and dull green. The minute flowers are greenish and inconspicuous and in lax sprays at the ends of the branches. The fruits are borne in clusters and are a quarter of an inch long and kidney-shaped. They are dry and have a papery brittle skin which is purple with glaucous bloom.

λ137 The plant was uncommon along the route of the expedition although it has a wide distribution from the northern Cape and the Transvaal through the Bechuanaland Protectorate to South West Africa and Southern and Northern Rhodesia.

[262] The fruits are edible. They have a sour taste and a strong aroma and little more than that for they consist mainly of the skin and the stone. [263] The leaves are sometimes used by the Bushmen for flavouring meat.

Ziziphus mucronata Willd. (4873, 5202) Photograph 28.

!hɔ̃: Bushman........	!e:i
‖ganakwe Bushman...	,‖aja
|gikwe Bushman......	≠k'ɛrɔ
Naron Bushman......	≠k'aru
Eastern !khû Bushman	,n≠a:

A semi-deciduous shrub or tree up to 12 feet high, twiggy and profusely branched, with the older branches drooping at the ends to give it a rounded shape. As a rule it is very thorny, with the thorns in pairs, of which one is hooked and the other straight. Thornless specimens have been reported, but are rare, and none were seen along the route of the expedition. The plant has alternate dark green shiny toothed leaves, tapering to a point at the tip and with three or four prominent veins branching from near a rounded base. They are stalked, and glabrous or nearly so. The flowers are in small greenish clusters and are not conspicuous. The fruits are ripe in early winter, but the trees bear sporadically and the crop varies greatly in quantity in individual trees. The fruit is brown and a third of an inch in diameter, with a shiny brown papery skin surrounding a thin layer of rather dry, mealy substance and a large stone.

This tree is widespread from the Sudan to the Cape Province. It was uncommon on the deep Kalahari sand but fairly frequent in the hard soil round the edges of the pans, where it sometimes formed open communities.

[262] The mealy substance in the fruits is sweetish and is eaten by the Bushmen, but it is not pleasant even by their standards.

Grewia avellana Hiern (4959, 5269) Photograph 29.

!hɔ̃: Bushman........	n!ɔ≠udi
‖ganakwe Bushman...	n!ɔ≠udi
|gikwe Bushman......	‖gam-tsa
Naron Bushman......	dʒudʒubu
Eastern !khû Bushman	dzwa:ma and zɔ:ma

Because of its habit, this one of the few Grewias distinct from the many which look alike. It occurs as a number of slender erect 18-inch stems in patches a yard across, bare in winter except where sheltered from the frost. It has also been recorded as a shrub four feet high. In summer the stems are leafy enough to trap the wind-blown sand, so that they are usually found growing up through a slight hummock. The leaves, borne on very short stalks and measuring one and a half inches by an inch, are alternate, serrate, roughly hairy, prominently veined and dull green. The flowers have narrow white petals and are half an inch across. The fruits are a shiny dark brown, half an inch in diameter and characteristically lobed, being known in Sechuana by a name which means *the buttocks of the queen*. Only a few specimens were found in fruit, which suggests that the season was over by the time the expedition started from Molepolole (mid June).

The plant was widely distributed along our route, sometimes in the open grassland and sometimes in the belts of woodland, but was not common. It has been recorded from Angola, South West Africa, the Bechuanaland Protectorate and the Transvaal. 137X

The fruits are edible but not very palatable, for they consist of large stones and only a little pulp, sweet and slightly mucilaginous. Nevertheless, according to a note on one of Schoenfelder's specimens (Schoenfelder No. 8, in the National Herbarium) they are a staple food not only of the Bushmen but also of several Bantu tribes, and can be kept when thoroughly ripe. 262 [251]

Grewia flava DC. (4941, 5024) Photograph 30. 137X

!h5̃: Bushman........	‚n‖a:
‖ganakwe Bushman...	‚k"um
|gikwe Bushman......	‚k"wam
Naron Bushman......	‚k"um
Eastern !khũ Bushman	‚n|ŋ

A rigid shrub about five feet high with numerous erect straight stems, often branching below the soil and so appearing unconnected. They are softly hairy when young. Old stems have a smooth dark bark and are sometimes slightly angled. The serrate leaves, which are shed in winter, are dull gray-green above and covered with a fine silvery down below, and make an attractive background for the bright yellow flowers which come out in midsummer. The fruits are half an inch across, usually four-lobed, and brownish-yellow when ripe.

Grewia flava is known from the four provinces of the Union, and from South West Africa and the Bechuanaland Protectorate. It occurred nearly everywhere along the route of the expedition and was one of the commonest shrubs of the central Kalahari, but only one of all the thousands of plants seen was in fruit.

The fruits have a little edible sweet pulp surrounding the seeds. They are an important Bushman food, not so much because of their quality as because of their abundance, and because they can be kept if they are first dried. They are then soaked in water or cooked before being eaten. 262 [251] [252]

Grewia flavescens Juss. (5053).

A lax deciduous shrub or scrambler up to 12 feet in height, with slender stems which often become four-angled in older specimens, and with leaves, flowers and fruits similar to those of *Grewia retinervis.* There was little of it fruiting, but whether the season was over or whether it is naturally not a heavy yielder is uncertain. 137X

This species has a wide distribution through tropical Africa. It was not seen south of Ghanzi, but was scattered from Ghanzi northwards to Gautscha Pan.

Its fruits are eaten by the Bushmen. As most of the Grewias were leafless and as there were more species towards the north, it became increasingly difficult to estimate the frequency of each when once the Ghanzi area had been passed, and nothing can be said as to the relative importance of the northern species in the Bushman diet. 262

X137 *Grewia retinervis* Burret (4875, 5066) Photograph 31.

!hɔ̃: Bushman........	ʘbɔ̃:
‖ganakwe Bushman...	‖ʔani
|gikwe Bushman......	‖gani
Naron Bushman......	‖gani
Eastern !khû Bushman	|gwa

A straggly many-stemmed five-foot shrub, sometimes a weak scrambler up to 10 feet high. The stems are half an inch thick at the base, rounded and slightly woolly when young, slightly flattened and glabrous when old, and tough and pliant. Its leavers are alternate, pale green, one and a half inches long and an inch wide, ovate with a pointed tip, toothed, and roughly hairy to the touch. They wither and fall soon after being frosted, but if out of reach of the frost remain on the bushes at least until the end of July. The plant bears spreading yellow flowers half an inch wide, and fruits the size of a pea, with a papery brown skin enclosing a few large pips and some fibrous mealy material. *Grewia retinervis* is closely allied to *Grewia flavescens*, so much so that I doubt whether the two should be considered anything more than varieties of one species. The differences are that *Grewia flavescens* is usually taller, and not so conspicuously veined on the upper surface of the leaves. Mr. B. de Winter, of the National Herbarium, Pretoria, has observed also that its older stems are square in section and those of *Grewia retinervis* are flattened.

Grewia retinervis was scattered over most of the area covered by the expedition, and common in the central Kalahari, specially in open grassy country. It has been recorded from the northern Cape and the Transvaal as well as South West Africa and the Bechuanaland Protectorate.

262 The fruits are edible. They ripen in winter, and have a slightly sweet
[251 taste and a pleasant flavour. They may be stored after being dried, and
252] are then soaked or boiled before being eaten. The crop, if one may judge from the 1955 season, is abundant, and the amount fairly constant for all the bushes. The fruits form an important part of the Bushmen diet,
[146 although little of them appears digestible. The roughage is voided almost
147] unchanged, in enormous faecal masses up to two and a half inches in diameter.

824 The dry stems of this plant nearly always contain the tunnelings of
372 grubs, and the tunnellings are packed with their excreta in the form of a brown, pith-like substance which forms a useful tinder. The Bushmen split the stems down the centre, make a slight depression in the flat surface and use this as a socket for the fire-drill.

X137 *Grewia* sp. aff. *Grewia bicolor* Juss. (5056).

Eastern !khû Bushman gamakʼwɔ:

A slender shrub up to six feet high, with many sparingly branched stems. The leaves are one and a half inches by one inch, very finely toothed, dark green above and pale below, pointed at the tip and rounded at the base. Both surfaces are covered with a fine grayish felt which is thicker on the lower surface. Typical *Grewia bicolor* has wool on the lower surface only. The fruits are the size of a pea, and have a little flesh covering usually one big seed. No flowers were seen.

This is another of the plants with a distribution which begins in the Ghanzi area and extends northwards, and the remarks made as to the distribution and importance of *Grewia flavescens* apply here also.

[262] The fruits are edible.

Adansonia digitata L. Photograph 32. 137X

Eastern !khũ Bushman ≠m

The Baobab, as it is commonly called, is shown in photograph 32. Its stem may have a circumference of up to 148 feet, and makes it quite unmistakable. In winter it is leafless but in summer it bears dense dark-green foliage. The flowers are pure white and up to six inches across, and the fruits, as described by Codd (1951: 120) are "oblong or egg-shaped, five to six inches or more in length and three to four inches in diameter, with a woody shell which is softly grey-velvety on the outside".

The southernmost specimens were seen in the neighbourhood of Ghanzi, and from there it occurred sporadically to Gautscha Pan, the furthest point north reached by the expedition. There were big gaps in its distribution and it was rare throughout, but in some parts of the Transvaal it occurs abundantly and may have an unbroken distribution over many square miles of country. It is widely distributed in the drier regions of north and south tropical Africa.

Inside the shell of the fruit is a white, pith-like substance which may 252
be eaten raw, or ground up and stirred into water to make a drink, or 262
boiled to make a porridge. It has an acid-sweet taste. The seeds which [272]
are embedded in the flesh are also edible and are eaten like nuts. In
other parts of Africa they are prepared in a somewhat involved way
which includes protracted boiling, fermenting and drying. There are
several records of the fact that the young leaves make quite a good substi-
tute for spinach, but as the expedition was during the winter and as the
trees are deciduous, I cannot say whether the Bushmen know of this, nor
whether the trees we saw were of the glabrous variety which is the one
used for spinach. No seedlings were seen. It is known that the white
shoot from the germinating seed can be used as a substitute for asparagus,
and that the tender root of the very young Baobab is also edible (Dalziel,
1937: 113). The trees are often hollow, and like *Boscia albitrunca* and 271
Ricinodendron rautenii may act as reservoirs for rain water which can be 312
used in times of scarcity. The Bushmen reach it by fitting hollow grass 824
stalks end to end to form a tube, and sucking it out. A further product
of the Baobab is a large caterpillar which feeds upon the leaves and which 262
is an important article of food aming the Natives of the northern Transvaal. 136
It is recorded also from South West Africa, and is very likely known to 825
and used by the Bushmen.

Ochna pulchra Hook. (5273) Photograph 33. 137X

Eastern !khũ Bushman !i and !e:i

A semi-deciduous tree with a clean but usually rather twisted bole which is white to light gray and has a peeling bark. The branches are bent and rigid and the wood brittle. They bear glossy light green alternate leaves which are almost sessile and usually entire, rarely with a very finely toothed margin. The tree has an attractive appearance even in winter, and the young leaves add to this in the spring for they range from pale green to reddish-brown. The flowers are borne in early summer, in showy scented bunches. They have yellow petals and a green calyx, which persists after the petals have fallen and turns bright red. The fruits are hard and green when immature but turn fleshy and black as they ripen. There are usually two or three, the size and shape of small beans, attached to a fleshy red swelling in the centre of the flower. The leaves have been suspected of causing poisoning in stock, but tests carried out on mammals have so far been inconclusive. (Uys and Thomas 1952, Steyn, 1949: 125.)

X137 *Ochna pulchra* is well known and widely distributed from the Transvaal to Northern Rhodesia and Angola. It was frequently seen in southern Bechuanaland and again in the north, but there was a gap between of about 200 miles where it was not recorded. Ghanzi was approximately in the centre of this gap. In the parts traversed by the expedition it was seen growing only on deep sand or in rocky soil.

252 262 The Bushmen stated that the ripe fruits when boiled in water yield a fat, which can be skimmed from the surface and used as food. This is confirmed by the notes on the specimen collected by E. B. W. Schoenfelder (number 28):—

> "Fruit when still green eaten after roasting in ash (Kung). When black and ripe cooked with water and the fat skimmed and preserved. The cooked fruit is eaten with pips (Kung and Diriko)."

X137 *Combretum apiculatum* Sond. Photograph 34.

Eastern !khũ Bushman ||aja

A small tree or many-stemmed shrub, usually about 10 feet high in the drier areas. It has paired rather stiff pale green glabrous leaves with a varnished appearance, which turn yellow in the autumn and persist on the tree well into the winter before being shed. The flowers are small and greenish-yellow and would be insignificant except that they are numerous and massed at the ends of the twigs. The fruits have four papery wings and are about an inch in diameter.

Combretum apiculatum is widespread and often common, extending from Northern and Southern Rhodesia through the Bechuanaland Protectorate to South West Africa and through the northern Transvaal to Natal, but it was not seen along the route of the expedition until the Gautscha Pan area was reached, where it occurred sparingly.

[262] The Bushmen stated that it produces an edible gum. I have been able to confirm this in the Transvaal, but observed that the gum is produced only rarely.

Combretum coriaceum Schinz (5052, 5270, 5330).

Eastern !khũ Bushman ≠gwa

An evergreen tree with paired stiff gray-green leaves. It is usually rather erect and in these parts seldom more than about 10 feet high, though it grows up to 30 feet under moister conditions in the northern Transvaal. The flowers appear towards the beginning of September. They are yellowish in colour and small, but crowded into showy little masses towards the tips of the twigs. The four-winged fruits are reddish-brown, and dry and papery.

It has been recorded from tropical Africa southwards to the Transvaal and Natal, but under a variety of names. Along the route from Molepolole to the north it was first seen 67 miles before Ghanzi. From there to Gautscha Pan it was fairly common except in the neighbourhood of Lake Ngami and the Okavango swamps.

[262] Although the tree produces an edible gum, it does so too rarely to be of importance as a food supply.

137X

Combretum imberbe Wawra (5204) Photograph 35.

Eastern !khû Bushman ≠ɔ

There were some magnificent specimens of this tree seen on the expedition, up to 40 feet in height, but the average was about 20 feet. It is rather sturdy as a rule, with a clean bole and light gray bark which is deeply fissured in all directions, and rigid branches and twigs. When young these are opposite or sub-opposite, straight, and often tipped with a hard spine, but as they grow older the spiny character is lost and the growth form becomes crooked so that the symmetry is masked. The tree has small opposite gray leaves an inch long and half as wide, and like the other species of Combretum it bears four-winged fruits and small inflorescences of yellowish flowers.

It was frequently seen in the Ghanzi area and to the north of Ghanzi, but not to the south, although it has been recorded from as far south as Vredefort in the Orange Free State. Its range is from Natal and the Transvaal through to tropical Africa.

It exudes an edible gum, but only rarely. [262]

Terminalia sericea Burch. Photograph 36.

Eastern !khû Bushman ¯dzɔ and za¯ɔ

Sometimes a graceful, erect, 30-foot tree with horizontal branches and a dark gray fibrous bark, and sometimes a much-branched shrub two or three feet high. The twigs tend to curve upwards slightly and bear towards the tips bunches of soft alternate leaves three inches long and an inch wide, darker on the under surface and covered with a fine silvery down. The tree is seldom completely deciduous, and many of the fruits also remain on the twigs through the winter. They are reddish and consist of a flattened seed with a wide membranous margin which forms a wing and aids their distribution through the wind. The flowers are borne in creamy catkins and have a strong and rather offensive smell. Another characteristic feature is that the twigs often have walnut-sized galls round them.

This species was common all along the route of the expedition, and has a wide distribution from east and west tropical Africa to the northern parts of the Cape Province and the Transvaal. It is usually on deep sand, and usually in communtities.

It sometimes produces an edible gum from injuries in the stem. [262]

Royena sericea Bernh. (5018, 5249).

A many-stemmed deciduous shrub up to six feet high, with a dark bark and crooked branches. The dull green leaves are obovate, sometimes pointed, alternate, velvety when young, usually one inch by half an inch but sometimes much smaller, and they tend to be crowded towards the tips of the twigs. Its flowers are creamy, inconspicuous but scented, with the petals tightly furled in the bud. The fruits are half an inch long, ovoid and with a smooth skin which turns red when the fruits are ripe. They contain several large seeds and a little yellowish pulp.

This shrub was widely scattered north of the Ghanzi area and rarer still to the south, where only one small clump was found.

No information was obtained from the Bushmen about it, but the pulp of the fruits is known to be edible and would no doubt be used in an emergency. It is faintly sweet, and insipid. [262]

X137 *Strychnos cocculoides* Bak. (4916) Photograph 37.

‖ganakwe Bushman... ‚|guwa

A 15-foot tree, erect and rather slender, sometimes unarmed and sometimes with very sharp paired curved thorns a little less than half an inch long. The leaves, which are also paired, are soft, minutely hairy and an inch and a half long and an inch wide with three prominent veins branching from near the base, one central and two near the margins. The old bark is dark gray, corky and deeply fissured, but the young twigs have a smooth bark densely covered with a fine down. The tree produces small greenish flowers massed into heads three quarters of an inch in diameter. The fruits are a little over a pound in weight and four inches in diameter, the size and shape of a gem squash, with the same type of hard rind, green when immature and turning pale brown when ripe. The seeds inside are embedded in a strongly aromatic pale pulp.

Strychnos cocculoides is recorded from the western Transvaal, the Bechuanaland Protectorate, Angola and central tropical Africa. On the expedition it was seen scattered through only one belt of heavy sand which began 136 miles north-west of Molepolole and ended 35 miles further on.

262 The fruits have an unusual and pleasant flavour, and according to a note on one of Schoenfelder's specimens in the National Herbarium the seeds may be eaten as well as the pulp. Galpin (1925: 22), who describes this tree under the name *Strychnos schumanniana*, states that the fruit may be picked green and ripened by burying it in sand. It will keep for several months without going bad. [251]

X137 *Strychnos pungens* Solered. (5447) Photograph 38.

An eight-foot bent evergreen tree with a spreading crown and paired hard shiny leaves with a sharp spine at the tip. It bears insignificant greenish flowers in compact small bunches in the axils of the leaves. The fruits and the veins in the leaves are similar to those of *Strychnos cocculoides*, and it has the same general distribution. Only one specimen was seen, near the northermost point reached by the expedition.

[262] The fruits contain a pleasant edible pulp which is, however, not considered as good as that of *Strychnos cocculoides*.

Raphionacme burkei N.E. Br. (4997) Photograph 39.

!hɔ̃: Bushman........ bi:
‖ganakwe Bushman... bi:
|gikwe Bushman...... bi:
Naron Bushman...... bi:

Nearly all of the plant is six inches below ground, in the form of a rounded storage organ about five pounds in weight and six inches in diameter, slightly flattened on top. It has a brown skin, and is pale yellow inside with flecks of white latex on the cut surface. It is connected by a "neck" a little thicker than a pencil to the above-ground parts, which consists of a few sparingly-branched erect stems, slender but wiry, six inches high and bearing narrow grayish-green leaves. The flowers, which are borne in small clusters, are greenish and inconspicuous, the fruits slender, three inches long and as a rule in pairs. The stems exude a milky juice when injured. They are not easily seen even in summer, and in winter less so, for the leaves are shed and the stems die back.

By the spring there may be nothing left to mark the position of the plant. 137X
How extraordinarily observant the Bushmen are was well shown when they 824
were asked if they could find a specimen and demonstrate its use. One man guided the party for four miles across country featureless except for clumps of trees to a spot where he knew of one growing. It was found after a short search—nothing more than two or three small sticks among the grasses, with the bark shredding into white silky fibres.

Raphionacme burkei is found from South West Africa through the 137X
Bechuanaland Protectorate into the northern Transvaal and the northern Cape. Two specimens were seen in the central Kalahari, and the species was determined from one of them which was sent to Pretoria for cultivation and flowered there in the following summer.

It is a well-known source of water among the Bushmen of the Kala- 271
hari. They extract the water from the storage organ by planing a pile 312
of shavings off it with the edge of a split stick, and then squeezing the 824
shavings in the hand and allowing the water to run into the mouth. This rather roundabout way of doing things appears to be without good reason, because the flesh of the storage organ may be chewed without any ill effect. It is firm and crisp, slightly fibrous, and faintly bitter.

Pentarrhinum insipidum E. Mey. (5171, 5191) Photograph 40. 137X

Eastern !khũ Bushman n!ɔ-ʃu and n!wa-ʃu

A leafy deciduous climber up to 10 feet high, and a vigorous grower which may completely cover the host tree. It has freely branching lax stems which are quite tough in spite of being only a matter of an eighth of an inch in thickness. They are covered with a fine white down which is just perceptible to the naked eye, and when broken they exude a little milky juice, so little that it is easily overlooked. At intervals of about five inches arise pairs of leaves, deeply cordate at the base, and with long stalks. In the younger stages they are minutely hairy but they become glabrous or nearly so as they grow older. The flowers rise in a group on a three-inch slender stalk from between the leaves. They are brownish with a yellow or white central portion, small and faintly scented. The fruits are occasionally produced in pairs but are more usually solitary. They are beaked, three inches long and half as wide, covered with blunt prickles, longitudinally wrinkled and dull green.

At Nama Pan this was a frequent climber among the trees, and it is widespread over southern Africa. It was not, however, seen in the country south of Ghanzi.

At maturity the fruits are hard and woody and packed with the fine 262
silky hairs that form the pappus of the seeds, but when green they are 252
softer and may be eaten raw or cooked as a vegetable, and may be stored for three weeks before they deteriorate. Their rather copious white latex is quite harmless. They have a crisp texture when raw and a pleasant flavour, nutty and faintly peppery. When boiled they are reminiscent of Asparagus. When the seeds inside have turned brown the fruit will be found too hard to make good eating. The leaves, too, may be eaten raw as a salad, and are used that way by some Transvaal Natives, but the Bushmen method of preparation is to pound them to a pulp in a wooden mortar.

Pentarrhinum insipidum grows well from seed and is a rapid producer 137X
of green material. It might be a useful fodder plant for domestic stock.

X137 ***Sarcostemma viminale* R. Br. (4993, 5170) Photograph 41.**

Eastern !khũ Bushman |gubu|gubu

A leafless climber, reaching a height of 10 feet or so, with gray-green jointed branching stems as thick as a pencil and containing a large quantity of pure white latex. They bear yellowish strongly scented flowers, and fruits shaped like a slender carrot. The plant is occasionally found growing in the open, away from any support, in the form of a dense clump of ascending stems about three feet high.

It is widespread in South West Africa and the Bechuanaland Protectorate, and through the drier parts of all four provinces of the Union.

●262 **There are records from the Cape Province, Natal and the Transvaal that the stems and fruits of this plant are eaten by the Natives, either cooked as a vegetable or raw as a salad, and I have eaten the raw stems in the Cape Province. They have no distinctive flavour. It is a dangerous plant to eat, for there is a poisonous strain of it which is not visibly distinguishable from the edible one (Dyer, 1937: 123), and which, if eaten in sufficient quantity, causes death after symptoms like those produced by strychnine. The Bushmen said that they never used it for food. I have no information as to its use or otherwise in the central Kalahari, where it also occurs. Presumably it would be safe for food where browsed by animals, which often happens and is easily seen.**

X137 *Ceropegia tentaculata* N.E. Br. (5220) Photograph 42.

!hɔ̃: Bushman........	**‖ala**
Naron Bushman......	**!?aru**
Eastern !khũ Bushman	**!ama**

A twiner up to eight feet high, minutely hairy, with opposite almost fleshy leaves about an inch long rising at intervals of two to three inches. The flowers which are produced on short stalks in a group of half a dozen or so are three quarters of an inch long and tubular, with a swollen base and lobes at the top produced into slender threads. The fruits are paired, four inches long, very slender, gray and filled with seeds attached to a silky pappus. The plant has a tuber a few inches below the surface of the soil, the size of a flattened apple, with a distinct hollow at the top from which the stem rises and with a rounded base which produces many short and slender roots. It is the colour of a new potato.

Ceropegia tentaculata has seldom been collected, and is recorded only from South West Africa. One specimen was found growing in deep sand in the shelter of a thicket about twenty miles south-west of Nama Pan. As it was recognised and named by one of the !hɔ̃: Bushmen who was with the expedition in South West Africa, it probably occurs also in the Bechuanaland Protectorate in the southern Kalahari, which is the home of these people.

[252 262] The tuber is edible when roasted.

Ceropegia sp. near *Ceropegia leucotaenia* K. Schum. (5309) Photograph 43

Eastern !khũ Bushman |gwi-ts'ou

The above-ground parts are pubescent, otherwise similar to those of *Ceropegia tentaculata*. The flowers also arise in groups but have a shorter tube, about half an inch long, with the processes of the lobes connected at the tips. The processes are dark brown and covered with slender hairs.

The plant has a shallow tuber which is about as big as a billiard ball but bell-shaped, with fine roots sprouting from the flattened base. It is similar in colour to the tuber of *Ceropegia tentaculata.* 137X

Only one specimen was collected, in the shelter of bushes on sandy loam near Nama Pan. It was cultivated in Pretoria and flowered in January, 1956.

The tuber is edible when roasted. [252 262]

Ceropegia sp. near *Ceropegia lugardae* N.E. Br. (5264) Photograph 44.

Eastern !khũ Bushman n!wi:

In the above-ground parts the plant is like No. 5226 (*Ceropegia* sp. near *Ceropegia mozambicensis*), but it is more leafy and the flowers have a single instead of double swelling at the base. It has a similar bunch of pencil-shaped roots.

One specimen was collected in shallow sand overlying rock at Nama Pan. It flowered in cultivation at Pretoria at the end of March, 1956.

The roots are edible when roasted and in texture and flavour like those of No. 5226. [252 262]

Ceropegia sp. near *Ceropegia mozambicensis* Schltr. (5226) Photograph 45.

!hɔ: Bushman........	**,gu:_n‖a**
Naron Bushman......	**,gu:_n‖a**
Eastern !khũ Bushman	**_n‖ßama**

A twiner with very sparsely hairy stems and leaves similar to those of *Ceropegia tentaculata.* The differences are that the flowers are borne in pairs on a peduncle about one inch long, one flower maturing long before the other, and that the flowers have a double swelling at the base and at the top are broadly funnel-shaped, with erect folded dark brown broad lobes connected at the tips and edged with sparse hairs. The tube is greenish, spotted with purple. The stem arises from a bunch of pale fleshy roots about six inches below the surface of the soil, the size of pencils but tapering at the ends and constricted at the top so that they are easily broken off.

Only one specimen was seen. It was growing in the shelter of a thicket on deep sand about 20 miles south-west of Nama Pan. It flowered in cultivation in Pretoria in January 1956.

The roots are edible when roasted. They taste somewhat like a potato, but are firmer and have a flavour of their own. They have no fibre and the plant would be worth investigating for improvement and cultivation as a vegetable. [252 262]

Duvalia polita N.E. Br. (5187) Photograph 46.

Eastern !khũ Bushman -da:daba

A sprawling succulent plant. The fleshy stems are glabrous, uniformly gray-green and four inches high, with usually six longitudinal rows of soft spines with a deep crease between each row. They rise from underground runners which are white and lack the distinct spininess of the stems. The corolla-lobes surround a prominent fleshy basal ring, and are dark brown, sometimes with vibratile hairs similar to those of *Caralluma knobelii* and sometimes irregularly flecked with yellowish-green. The

Y137 specific name, which means *polished*, refers to the shiny appearance of the corolla-lobes towards the base. The fruits, borne in pairs, are between a half and a quarter of an inch in thickness and six inches long, tapering at the end and containing numerous flattened seeds with a silky pappus.

Although it has a wide range across tropical and sub-tropical Africa, it is uncommon; and only one specimen was collected on the expedition, under the shelter of scrub at the edge of a rocky outcrop at Nama Pan.

[252 262 312] The stems are edible raw or roasted, but have a bitter taste. They are sappy enough to be a useful source of water.

Caralluma knobelii (Phill.) Phill. (5094, 4914) Photograph 47.

!hɔ̃: Bushman........	-≠aberɛ
‖ganakwe Bushman...	-da:daba
|gikwe Bushman......	-da:daba
Naron Bushman......	-da:daba
Eastern !khũ Bushman	-da:daba

The plant consists of a number of stubby, succulent erect stems four inches in height and half an inch in diameter. They are glabrous and dull bluish-green, mottled faintly with a darker green and square in section, with four rows of sharp and fairly hard-tipped spines. They exude a clear greenish juice when cut. The flowers are white to greenish, with dark purple blotches and edged with sparse delicate knobbed hairs known as vibratile hairs because of the way they are moved about by even the gentlest breeze. The stems arise from underground runners which have the same form as the erect stems except that they are white, and more slender.

This species, which is known only from the Kalahari, was found in various places on deep sand between Molepolole and Ghanzi, but was nowhere common. It was in the shelter of trees and scrub, and was not seen in the open.

[252 262] [312] The whole plant is edible raw or roasted, but the underground portions are better than those above ground, which tend to become bitter. They have a peculiar smoky flavour which is not unpleasant, and their abundant juice makes them a useful source of water.

Stapelia kwebensis N. E. Br. (5140) Photograph 48.

Eastern !khũ Bushman -da:daba

Similar in habit to *Caralluma knobelii*, but with dull green downy stems and rounded instead of sharp corners. The spines too are shorter and tipped with small erect leaves. It has dark brown flowers with slender lobes ridged on the upper surface and radiating out from a shallow central pit.

Only one specimen was collected on the expedition, on a rocky outcrop at Gam, but the species is widely distributed in South West Africa except in the extreme south and it is known from the northern Transvaal as well.

[252 262] The stems are edible, raw or roasted.

Fockea sp. (5136, 5236).

Eastern !khũ Bushman ʼ!xwa:

One of the two specimens collected was in the open among rubble at the edge of a sheet of rock at Gam, a plant with fleshy stems 12 inches high, and the only one of its kind seen in that vicinity. The other specimen was growing with several more in stony scrub-covered ground near Gautscha Pan, and appeared similar except that the stems were thicker and were twining to a height of several feet among the other bushes. The leaves drop during the winter, but a few were still to be seen, linear, 137X paired, and about three inches long and half an inch wide, and there was one fruit, as long as the leaves and shaped like a small cigar. The stems rise from a brown-skinned underground storage organ which may be more than a foot in length and up to five inches in diameter. It is often oddly shaped if growing in rocky ground, as these all were, and has a rather spongy texture, a combination which makes it difficult to dig up without damage. Several were brought in at a Bushman encampment about 20 miles south-west of Nama Pan, but none of them were entire. The specimens I collected were lost in transit to Pretoria, and though they could be placed in the genus Fockea from what had been seen in the field, the species is unknown.

The storage organ is eaten raw by the Bushmen. The flesh is white [262] and rather flabby, with a faint but pleasant flavour of coconut ice. As [312] well as being a food it is juicy enough to be a useful source of water. It could possibly be bred into a plant worth cultivating.

Ipomoea verbascoidea Choisy (5223, 5319) Photograph 49.

Eastern !khũ Bushman n!ɔru

Tubers and seeds of this species failed to grow in cultivation in Pretoria. The notes which follow were made partly from herbarium specimens, for the plants were quite leafless when they were seen in the field in August. They were conspicuous in spite of their bareness, because of the small pure white masses of wool in which the seeds were embedded. These masses were scattered along numerous slender twigs that arose from a group of sturdy, cane-like stems, half an inch thick and eight feet long or more. The stems are scramblers, or, if no trees are at hand, lax and spreading. They exude a little milky juice when cut. The stalked leaves are simple, rounded, and up to four inches across, and bear in their axils single large purple flowers of the typical Convolvulaceous (morning glory) type. The plant is covered with a white wool except on the upper surface of the leaves, where it is sparsely hairy.

Two plants were seen on the expedition, both in the neighbourhood of Nama Pan, and both on sand and among fairly dense mixed scrub. There are records of the species from South West Africa, the Bechuanaland Protectorate and Angola.

A note on one of the herbarium specimens states that the fruits are [262] edible, but this was not mentioned by the Bushmen. They did however 312 state that the storage organs were used as a source of water. These are six inches below the soil, sometimes partly exposed and partly eaten by animals. They are firm and juicy, and those seen were the size of a football, with a white flesh and a dark brown skin. The water may be [271] extracted by chewing the flesh or by pounding it and squeezing the pulp.

Ipomoea sp. (5179) Photograph 50.

Eastern !khũ Bushman !garubɛ 137X

A slender plant with three or four bluish-reen leaves up to three inches long, borne on a four-inch erect stalk and themselves erect, and deeply and narrowly lobed. There are usually three or four tubers to each plant. They are found at any depth down to nine inches, and are variously shaped but regular in outline, typically the size and shape of a large apple with a slight depression on top, where they are connected at intervals of

(137 a foot or so to an underground stem which branches and turns unexpectedly in various directions. They have a thick brown skin with a bronzy sheen, are slightly bitter to the taste and exude a little latex when the skin is broken. No flowers were seen in the field, and although specimens cultivated in Pretoria made good growth, they did not produce flowers. No fresh leaves were seen in the field either. They are evidently very susceptible to the cold, for it was noticed that the cultivated specimens dropped theirs before the first frosts.

Fragments of this plant which had been killed by frosts were scattered plentifully through the open grassy sandy areas near Nama Pan, and the tubers were often unearthed while other plants were being dug up.

[262] The Bushmen stated that they did not eat the tubers, but that they were eaten by buck.

The leaves of this plant cannot be distinguished from the leaves of *Ipomoea bolusiana*. *Ipomoea bolusiana* is known to have an edible tuber (Schinz, 1888: 271, Boss, 1934: 87), and from the available herbarium specimens and the literature it appears that it is single, and immediately below the surface of the ground. Because these two facts are in conflict with what was seen and what was reported by the Bushmen, it is doubtful whether the plant from Nama Pan is the same species.

Ehretia rigida (Thunb.) Druce Photograph 51.

!hɔ̄: Bushman........	||ga
||ganakwe Bushman...	||gawu
|gikwe Bushman......	||ga
Naron Bushman......	||ga

A shrub, usually about six feet high, with a pale gray bark, a rigid, erect habit and a mass of branches, which in older plants spread out and turn downwards to give a "weepy" appearance. New growth is straight and smooth, and there is a very fine rusty wool on the youngest twigs. It contrasts strongly with the older growth, which is usually knobby and crooked and quite glabrous. The leaves are elliptic or obovate, stiff, minutely hairy and shortly stalked. They are scattered evenly along the new growth, but on the old growth they are crowded on dwarf shoots averaging an inch in length. Their dull green colour makes the plant rather unattractive, but it can become showy when the small blue or white flowers are out. The fruits are the size of a pea, soft and red when ripe and often with the withered remains of the style persisting.

Ehretia is found in all four provinces of the Union and in South West Africa, the Bechuanaland Protectorate and Rhodesia. It was scattered through the Kalahari south of Ghanzi but was not recorded in the north, and was never common and never gregarious.

[262] The fruits may be eaten raw when ripe, but are insipid, with a sickly-sweet taste and a faint and rather unpleasant flavour.

Rhigozum brevispinosum O.Ktze. (4946, 5255).

!hɔ̄: Bushman........	‚||ha:
||ganakwe Bushman...	n|ɔ-ji
|gikwe Bushman......	‚t'a:
Naron Bushman......	n|ɔ-ji

An erect, slender deciduous shrub up to 10 feet high, with opposite branches and opposite blunt spines which develop into branches like the spines of *Catophractes alexandri*. There is a small tuft of wool below each spine, from which is produced a bunch of six or eight leaves an

X137 older stems often form the points of characteristic zig-zags. The fruits are red when ripe and contain about five seeds. They open by means of a latitudinal break (circumscissile dehiscence) so that the skin at the end of the fruit comes off like a cap. The central jelly-like portion of the fruit, which has the seeds embedded in it, often remains behind when the cap is removed. The plant is deciduous, and the vine dies back if the winter is severe. It arises from a pale brown rootstock the size and shape of a large pear, which in the three specimens collected was partly above the level of the ground.

Its range is from the northern Cape Province, the Transvaal and Zululand through to Rhodesia and South West Africa. It was collected south of Ghanzi and again in the neighbourhood of Gautscha Pan, but was nowhere common. It is a woodland plant and does not occur in the grasslands.

[262 252] The fruits are sweetish and edible when ripe. The rootstock is bitter and is not eaten, but the stems and leaves are boiled to produce a spinach which is fairly palatable, but stringy. It is eaten also by certain Natives in the northern Transvaal.

Corallocarpus welwitschii (Naud.) Hook. f. (5315) Photograph 54.

Eastern !khũ Bushman !gwara!ai

The fruits of this plant have a short but fairly distinct stalk, and its rootstock has a faint unpleasant smell when freshly dug. In all other respects it appears to be identical with *Corallocarpus sphaerocarpus*.

It has been recorded from the Bechuanaland Protectorate and South West Africa, but so far not from the Union. The only specimen found on the expedition was growing in sand under trees at Nama Pan. It grew well in cultivation at Pretoria.

[262 252] There is no information on the edibility or otherwise of the vine, but the ripe fruits may be eaten raw. They are sickly sweet and flavourless. The Bushmen stated that the rootstock is edible after being cooked, but I found it too bitter to eat.

Momordica balsamina L. (4929, 4970, 5003) Photograph 55.

A climber over grass and low bushes or a runner over the ground, with sharply-lobed light green leaves about two inches across arising singly at intervals of a few inches along the numerous lax, slender stems. It has three-inch spiralling tendrils rising at the bases of the leaves. It is glabrous, with a soft, attractive look, but has a strongly unpleasant smell when bruised, The flowers are an inch across, pale yellow and after the usual Cucurbitaceous pattern as shown in the photograph of *Coccinia rehmannii*. The fruits, green when immature, are an attractive orange when ripe, one and a half inches long and an inch in diameter, with about ten longitudinal rows of short blunt prickles, and contain half a dozen seeds enveloped in a crimson pulp. The skin of the ripe fruit splits longitudinally and almost explosively when it is handled. The plant is an annual according to the *Flora Capensis*, but those in the Kalahari remained alive through the winter and put out fresh vines in the early spring to replace the frosted growth of the previous season.

It has been recorded from the four provinces of the Union and from Portuguese East Africa, the Bechuanaland Protectorate and South West Africa, and although it was not noticed north of Ghanzi, it was widespread to the south.

The fruit, according to the label on one of the herbarium specimens, is "very poisonous", but there appears to be no satisfactory proof of this. The Bechuana state that the crimson pulp round the seeds is edible, and I ate it without any harmful effects. It is sweetish but has a rather unpleasant slimy texture. [377] [262]

Citrullus naudinianus (Sond.) Hook. f. (4983, 4984, 5272) Photograph 56.

!hɔ̃: Bushman........	ǁgan
ǁganakwe Bushman...	gã:
|gikwe Bushman......	gã:
Naron Bushman......	gã:
Eastern !khũ Bushman	tʃa

This vine, commonly known as the Gemsbok komkommer, is a runner on the sand and not a climber. It has a tap-root the shape of a large carrot, which may be three inches or more in diameter at the top and three feet long, and which grows hard and woody with age. The younger roots are full of juice and intensely bitter, and cannot be eaten by human beings, although many showed signs of having been eaten by animals. The runners, which may reach a length of 30 feet, are stouter than those of the related *Cucumis hookeri* and No. 4895 (see page 50), and unlike them and those of *Citrullus vulgaris* are fairly frost-resistant. Many were still green during the heavy frosts experienced on the expedition, and were even putting out fresh leaves. They often have a zig-zag growth form and may root at the nodes. Apparently they die back after a few seasons, for live and dead runners were common. The leaves, borne on a one-inch or two-inch stalk, are dull green, lobed, very rough to the touch, and between two and four inches long. A stout slightly hooked tendril rises at the base of each leaf and is usually about as long as the leaf-stalk. The fruits vary in shape from ovoid to nearly spherical, and weigh about half a pound. The skin is covered with thick soft spines a quarter to half an inch long, and is pale yellow when the fruits are ripe. They can stand heavy frost without spoiling, and are eaten by many different animals.

The plant has been recorded from the sandy parts of the north-western Cape Province and Orange Free State, the Transvaal, the Bechuanaland Protectorate, South West Africa, Angola and Northern and Southern Rhodesia. On the expedition the runners were common between Molepolole and Ghanzi but the fruits, in tens or in hundreds, were in patches sometimes many miles apart. The plants were not found on the firmer "pan" soils and were much less common north of Ghanzi.

The fruits have a thin rind containing numerous flattened white seeds [262] embedded in a green translucent jelly-like flesh which may be eaten raw [252] or roasted and has a distinctive, slightly rank flavour. The pips and skin are often roasted separately and pounded to make en edible meal. As a [312] source of water this plant comes next in importance to *Citrullus vulgaris*, but like *Citrullus vulgaris* (and *Cucumis hookeri*) it cannot be depended upon where there have not previously been adequate rains, for the water in its perennial tap-root is not in itself enough to produce a crop of fruit.

Citrullus naudinianus has possibilities as a cultivated plant.

x137 *Citrullus vulgaris* Schrad. (4937, 4999) Photograph 57.

!h5: Bushman........	dam
||ganakwe Bushman...	n||an
|gikwe Bushman......	n||an
Naron Bushman......	n||a-ĩ
Eastern !khũ Bushman	_t'a_ma

This plant, one of the melons and commonly known as the tsama, has stout six-foot vines half an inch in diameter at the base and a quarter of an inch at the tip. They are covered rather densely with light brown hairs, which turn white and stiff with age. The vines are usually prostrate, but occasionally festoon themselves over grasses and low shrubs with the help of small Y-shaped tendrils, curly at the tips. The leaves are borne on two-inch stalks and are hairy on the ribs, dull green, rough to the touch and deeply lobed. Each plant produces male and female flowers. They are an inch in diameter and pale yellow, and the fruits which follow are rounded and up to six inches in diameter and six and a half pounds in weight. As many as 34, of all sizes, have been counted on one plant. The rind, densely hairy when young but later quite smooth, is dark green mottled longitudinally with light green, and contains a crisp, juicy, tasteless white flesh in which numerous flattened brown seeds are embedded. The melons can endure heavy frosts without becoming spoilt, but the rest of the plant is very susceptible. The frosts, however, merely hastens its death for it is in any case an annual.

This melon is indigenous to south-west Asia and the warm dry regions throughout Africa. The water-melon is merely an improved variety of the same species, which has been known in Egypt and Babylonia since the beginning of history (Marloth, 1913-1925: III: II: 205). The tsama was widespread but patchy along the route of the expedition, and areas of abundant melon alternated with long stretches where it was not seen. It was not confined to the sand but grew also on the hard soil of the pans.

262
312
824
[184]
[244]

The tsama is unquestionably the most important plant to the Bushmen in this part of the Kalahari. They are known to use it as their sole source of water for months on end and it is extremely doubtful whether they would be able to live permanently in the Kalahari without it. Its importance is shown by the fact that one group of Bushmen in the central Kalahari had a small patch of tsama which they had grown from seed, and the Bushmen are not as a rule agriculturalists. Nevertheless, the tsama is not an infallible standby, for the reasons given in the discussion on *Citrullus naudinianus,* and when the need arises the Bushmen can and must substitute more meagre but at the same time more reliable sources of water, for example from *Sansevieria scabrifolia.*
252
262
312
When it is used for drinking-water the melon is opened at the top like an egg and the central portion cut out and eaten. The rest of the pulp is then mashed inside the rind with a stick to a watery mass which is half drunk and half eaten, the pips being put aside and later roasted and pounded (without being peeled) to make an edible meal. The melons are sometimes roasted before being eaten, which adds a little flavour, and they may be cut up and mixed with meat to form a stew, which is conveniently cooked in the rind itself. Although no bitter specimens of the tsama were found along the route of the expedition, they do occur. Their flesh is poisonous and unfit for human consumption, but their seeds are free of poison and edible after roasting.

000

At some villages of Bakalahari (which are a Bantu tribe), the tsama is regularly cultivated. These and wild melons are collected and stored under shelter, and goats, horses, cattle and even dogs are kept with tsama as the main source of water. The livestock use the melon more economically than the Bantu and Bushmen do, for they eat the rind as well. Large 000 animals, and this according to Livingstone (1857: 48) includes the carnivora, are able to broach the tsama rind unaided, but evidently the smaller / animals do not find this easy, for many tsamas were seen with the marks of teeth on them, showing where animals had attempted unsuccessfully to reach the pulp inside. As for the rodents, whose burrows were seen by the thousand all through the central Kalahari, they are well equiped for making holes in the rind, and apparently have little difficulty, for hollowed-out tsamas were frequently seen.

Cucumis hookeri Naud. (5012, 5028, 5047) Photograph 58. 137X

!hɔ̃: Bushman........	n≠ɔ?nu
Naron Bushman......	n≠ɔ?nu

An annual vine with slender straight stems up to six feet long, and a shallow spreading root system. It produces tendrils and may occasionally trail over low shrublets and tufts of grass, but normally it is a runner over the surface of the sand. All parts are covered with minute stiff white hairs, which are densest on the leaves, particularly on the under surface, and make them rough to the touch. They arise singly at intervals of up to four inches, vary from one to three inches in length, and are dark green with large rounded lobes, and stalks up to one and a half inches long. The tendrils arise at the base of the leaves. They are an inch long and are tightly curled at the tip. Both male and female flowers, borne on the same plant, are yellow and trumpet-shaped with triangular petals, and an inch in diameter. The fruits are the size of a hen's egg, brown with six or seven longitudinal lighter stripes and covered with soft but fairly stout prickles, the flesh being green, transparent and almost jelly-like, with the smell of cucumber.

This is a widespread species through the drier and sandier parts of the northern Cape, the Transvaal, Southern Rhodesia, the Bechuanaland Protectorate and South West Africa. It was found all along the route of the expedition in the open grasslands, and sometimes in great abundance. The fruits were undamaged although the leaves and runners had been killed by frost by the time the expedition passed through the Kalahari.

The fruits have a slightly sour taste but are good to eat, and as they 262 have none of the thick white layer of firm flesh which surrounds the pulp of the cultivated cucumber they contain proportionately more moisture and are a useful source of water. Bitter fruits are known to occur in some strains of this species and are to be avoided, not only because of their unpleasant taste but also because they are poisonous.

Cucumis metuliferus E. Mey. (5098) Photograph 59. 137X

An annual climber over trees and shrubs with angled, sometimes almost winged 10-foot vines thickly covered with stiff brown hairs and bearing the leaves at intervals of three inches or so. The leaves, which are covered with similar hairs, have three or four rounded or acute lobes and small teeth along the margins. They are up to three inches long and arise from a two-inch stalk, at the base of which is a tightly-spiralling tendril. The flowers are trumpet-shaped, yellow and, including the small triangular petals, about an inch across. The immature fruits are dark green mottled with lighter green. They ripen during the winter and are then bright orange, five inches long and half as wide, and armed with hard and exceedingly sharp spines which can injure the skin if carelessly handled. They have a thin rind covering a green transparent flesh in which the seeds are embedded.

The storage organs[1] are firm but juicy and may be eaten raw or cooked. The flavour is pleasant, rather like that of a turnip, and if they are eaten raw they are a valuable source of water. They were an important article of food to the Bushmen we met in the central Kalahari, and the plant would be worth investigating with a view to cultivation after improvement through breeding. 262 [252 312]

Coccinia rehmannii Cogn. (4954, 5029) Photograph 61. 137X

!hɔ: Bushman.........	mʘwajé:
ǁganakwe Bushman...	ǀga:
ǀgikwe Bushman......	ǀga:
Naron Bushman......	ǀga:
Eastern !khũ Bushman	ǀga:

A vine, climbing by means of tendrils to a height of six or eight feet, and bearing on half-inch petioles a dense growth of dark green leaves which are deeply and irregularly lobed and very variable in size and shape. They have a rough texture from minute scattered white hairs, more numerous on the upper surface and pointing forward. The stems are slender and angled, and bear a few of these hairs also. The plants are either male or female, and both male and female flowers are trumpet-shaped with short triangular petals, pale yellow and three quarters of an inch across. The fruits are three quarters of an inch long, with a bulbous base and a rather thick neck, green mottled with white when immature and red when they ripen in the autumn. The old stems die back during the winter and new ones are produced the following spring from a perennial tuber buried about four inches below the surface of the ground. The tuber tapers gradually when young, but thickens and assumes various shapes as it grows older, and the bark, from being smooth, becomes rough and fissured. It does not "bleed" if injured superficially, but from deep injuries it exudes a clear astringent mucilage.

Specimens on the expedition were found not in the open grasslands, but always growing in shelter under a bush or in a thicket. It was midwinter and they were dormant, represented above ground by a few fragments of dry and leafless stringy stem among the twigs of the sheltering tree, and in consequence exceedingly difficult to find. Even after the presence of the plant had been established the finding of the tuber presented difficulties, for the connection with the vine overhead was often broken. The plant appeared to be occasional but widespread in the parts through which we travelled, and three tubers, all of which were successfully cultivated in Pretoria, were collected in different parts of the Kalahari. It is recorded also from the Cape Province, the Transvaal and South West Africa.

Besides providing food, the tubers are sappy enough to be a useful source of water, but they must be roasted first for they cannot be eaten raw. Older woodier tubers are best boiled, but even so the fibre is so tough that it is ejected after being chewed. At all stages the tubers are rather tasteless. They are known also to the Natives in some parts of the Transvaal, and eaten by them, but in this land of relative plenty they are not a popular food. The fruits also are edible, but rather sickly sweet and flavourless. Doubtless they are used by the Bushmen, but I failed to ask them. 252 262 312

[1] [CUCUMIS; SEE CATEGORY 116, P. 50 FOR DESCRIPTION --ANALYST]

X137 *Coccinia sessilifolia* (Sond.) Cogn. (5167) Photograph 62.

Eastern ǃkhũ Bushman ¯k'ì:dwa

A vine with many slender stems and bluish-green sessile leaves, deeply and irregularly lobed but usually less so than those of *Coccinia rehmannii.* The are covered with tiny raised scales on the upper surface, which sometimes show through on the lower surface as dots, and although hairs are present they are nearly all confined to the margins and too small to be seen by the naked eye. The tendrils are produced at the base of the leaves. Male and female flowers are borne on different plants. They are superficially alike, and similar to those of *Coccinia rehmannii.* The fruits are ovoid, three inches long and one in diameter, and are bright red when ripe. The leaves drop during the winter, and the vines also wither and disintegrate, but fresh ones arise in the spring from a perennial tuber weighing up to 25 pounds or so and similar in all respects to the tuber of *Coccinia rehmannii.*

Although the plant has a wide distribution on a variety of soils in the Cape Province, the Orange Free State, the Transvaal, the Bechuanaland Protectorate and South West Africa, it was not seen on the expedition until Nama Pan was reached, where it was growing under the shelter of trees in sand. Two tubers, which happened to be male and female respectively, were sent to Pretoria, and flowers and fruits were produced in the summer of 1955-56.

262 Both tuber and fruit are edible. The tuber, which is prepared by
252 roasting or boiling, is fibrous and rather tasteless. The fruits may be
eaten raw when ripe, and although sweet are without much flavour. They
are best used for food when gathered green and cooked as a vegetable.
Their texture is then fairly firm and their flavour like that of Asparagus.
[136] An added advantage of using them green is that one avoids the larva of
a certain fly which, in Pretoria at any rate, often heavily infests the more
mature fruit.

114 It is of interest to note that although there is a record in the National
X137 Herbarium that birds eat the fruit and that the tubers are dug out and eaten
by buck, there is no record of the fact that the plant is eaten by human
beings. On the contrary, the information on one specimen is "Fruit is
very poisonous to children" and on another "Toxic".

881 companions saying, " I dare not speak to you." The married
[867 women visit the *ǂkham-khoidi oms* and instruct the inmates
868] in various domestic matters, *e.g.*, the way to clean and tidy
their huts, to remain quiet when their husbands are cross,
to prepare their husbands' food separately from their own, to
pick up and beat the kudu skin on returning home in the
evening so that the husband does not sleep on the previous
day's dirt, etc. They further teach them to gather wood,
to make the fire, to take away the ashes and so forth. At the
onset of the first menstruation the girl tells her mother or,
in case she has no mother, her best friend (*!hosas*), who then
reports to one of the married women, not necessarily to the
gei-khois. She is then isolated in a small round hut which is
[343] completely closed in except for a small entrance. It is known
as the */hawa-omi* (hut for waiting) and is situated close to the
ǂkham-khoidi oms. She is required to remain inside the
/hawa-omi and dare not show herself outside. No fire is made
in the hut. She is fed by her mother or, in the absence of
the latter, by another married woman. She is not visited
by anybody except the person who feeds her. No medicine
is given to her. Daily applications of *!gūb*, a red powder
obtained by pulverising the bark of a tree, and of the roasted
and powdered fat-containing seed of the *ǂerob* tree are made
to her hair by the attendant. She may be given veldkos, but
[262] is not allowed to partake of meat. No man, not even the
girl's father, may pass close to the */hawa-omi* or attempt to
speak to her. She remains in the */hawa-omi* as long as the
flow lasts. When it has ceased she informs her mother or
the woman who has been attending her. The latter tells the
535 other married women and they all prepare to dance the
881 */hawa-ǂnab* (menstruation dance). This dance takes place
during the day and men may not take part in it. They may,
however, remain in the *//gāus* while it is going on or enter
it when returning from the veld. The *ǂkham-khoidi* are also
excluded from it. The */hawa-ǂnab* may be continued for three
or four days. When the dance is about to begin an old
woman, generally the *gei-khois*, holding a jackal tail duster,
takes up a position some distance in front of the */hawa-omi*,
and, dancing in one spot as if marking time, shouts
Ki-ri-ri-ri-ri-ri to waken the initiate and to summon the other
women. The latter then emerge from their huts and, dancing
as they come along, take up position behind the */hawa-omi*.
Two of them dance forward, passing one on each side of the
little hut, towards its entrance and, as they reach the latter,
the initiate comes out and the old woman stops shouting.
After covering her whole head and face with a duiker skin
kaross (*/gan-tab*), leaving only the eyes visible, each of the
women takes an arm and, the other women coming into line
from behind the hut, all dance towards the old woman who
leads the way to the */huru-ǂgab*. Here they dance, the feet
being thrown out sideways, always abreast of each other, with
the old woman leading. Men are not permitted to watch the
881 dance. When the dance is about to end they return her to

524 thing. This they do one by one, each in turn beckoning to the others to come and see.

In the *surus-/hurub* (game of the ringhals snake) one woman acts as the snake, standing with her hand and forearm raised above the forehead. As the other women approach her she hisses and strikes with the raised hand after the manner of a snake, causing them to scream and retire. This game is said to be founded on the experience of a woman into whose eyes a snake spat while she was trying to drive mice out of a shrub by means of her stick.

The following are a few examples of the games played by the *‡Ao-//ein* and *//Aikwe* of the Kalahari, viz.: *Children's*: [857] a man bartering goods from a trader; cock ostriches fighting with elephants which have come to drink at waterhole; a fight between two opposing groups, small bows and wooden arrows being used; a python lying in wait for and capturing its prey at a waterhole. *Men's*, the ostrich game; throwing the *isani*, in which a thin, short-feathered stick, weighted at one end by means of a large bean (bauhinea esculenta), is flung into the air and kept going by catching it on a stick in its descent and flinging it up again; throwing the stick, in which each player has a thin stick, about three feet long, which he flings forcibly on to the ground in such manner as to make it rise into the air and shoot away from him. *Women's*, catching the ball in which a melon or round tuber is used for the purpose; the capture of brides by young men, etc.

ECONOMIC CONDITIONS.

Food Supply, Etc.

137 The source of the food supply varies very considerably in
184 different localities. In some it is derived mainly from the
268 vegetable, in others from the animal, kingdom. The Kalahari and northern parts of the territory are rich in both plant and animal life and the Bushmen inhabiting those parts consequently have a fairly well-balanced dietary. In the central and southern Kalahari the most important among the vegetable foods are the *tsamma* (citrullus vulgaris), öintjes (cyperis edulis Dtr.) and *//nõun* (Bauhinea esculenta). As one proceeds northwards various fruit-bearing trees appear, *e.g.*, the wild fig, palm, omungete nut, wild orange, omua[illegible]di, omuve, etc. In addition to the above numerous varieties of edible roots, bulbs, tubers, berries, etc., appear in great profusion during and after the rainy season.

222 Among the *Hei-//om* the following ceremony is observed in connection with the collection of veldkos by the women. It is practised when the fruit of the *‡huin* ripens, generally after the onset of the big rainy season in the month of February. On a certain day, appointed by the *gei-khoib*, all the women, under the guidance of the *gei-khois*, set out to collect the first fruit of the *‡huin*, the men in the meantime remaining in the *//gāus*. The trees from which the fruit is to be gathered

are indicated by the *gei-khois*. On the return of the women 222
to the *//gãus* they deposit the bags containing the fruit in
front of the hut of the *gei-khoib*. The *gei-khois* then fills
four or five basins by taking a little from the bag of each
woman and places them under the *!heis*. Her husband now
kindles the *!hei/ais* and, after having applied *‡norab* and
dabas to appease the fire for a plentiful harvest, takes a
handful or two of the fruit and eats it. The fruit is now free
and both men and women may eat it. There is no name for
this ceremony, but the first fruit is called *!gau-ei-/un*.

Among insects, locusts, ants, scorpions, young bees and 262
honey are greatly relished. Frogs, lizards, snakes, etc., are
also eaten. In fact, all living animals are eaten with the
exception of the mole and the hyena, the former because its
winter larder of öintjes forms a valuable and easily obtainable
addition to the supplies of the Bushmen and the latter because
it eats human corpses.

The methods used in the pursuit of game vary according 221
to the season, the year being divided into a cold, dry season 224
(winter), a hot, dry season (spring and early summer), a
small, rainy season (September and October) and a big, rainy
season (January to April). Snaring is resorted to only during
the dry season in the case of such animals as guineafowl,
bustard, aardvark, ostrich and small game. Pitfalls are not
made use of except for hare and springhare as too much
work is entailed in making them. Springhare and snakes
are also caught by means of a long barbed stick which is
passed into the burrows, the animal being transfixed and then
dug out. During the big rainy season when the ground is
sodden with moisture small buck such as duiker and stembuck
are run down on foot and killed with a knob kirri. This
method is not applicable to small game during the dry season
owing to the difficulty in following the spoor. In the hot
weather, however, young buck are easily caught in this
manner as the hot sand causes the hoofs to come off. The
gemsbuck does not tire easily. It is run down, therefore,
only during the big rainy season when the soft ground impedes
its progress and causes it to be caught comparatively easily.
All other varieties of big game are run down in the hot, dry
season. After a herd of game has been located one or more
men give chase at a steady trot. The animal is pursued
relentlessly until it is exhausted and brought at bay, when it
is killed with assegaai.

Bow and poisoned arrows are used all the year round. These 184
weapons differ considerably in character in various localities. 411
The Kalahari bow is small compared with that used by the
!Kũng of the Oschimpoloveld, and *Hei-//om* of the Etosha
Pan region; the arrow consists of a reed shaft, bone foreshaft
and bone or iron tip, whereas the latter use arrows with
feathered wooden shafts and iron tips only. The poison also 184
varies in different localities. In southern Namaqualand it 278
is constituted of a mixture of plant juice (euphorbia), snake
poison, scorpions and spiders; in the southern and central

184 Kalahari only insect poison is used, and further north and
278 north-west only plant poison.

224 All tribes observe certain customary practices in connection
with the hunting of animals with bow and arrow. These
[184] vary considerably among the different tribes. The following
is an account of the practice as met with among the *Hei-//om*.
After an animal has been shot it is followed by the hunter
until it expires or until nightfall when he returns to the
//gãus (camp). The following morning the whole community
takes part in the search for the carcass, as the previous day's
tracks had in all probability been effaced during the night
by other animals. The searchers spread out on a wide front
and keep a very sharp lookout for the presence of vultures.
After the carcass has been found it is skinned by the men.
252 The belly is then opened and the entrails removed and
cleaned. Bags are made from the stomach and into these the
blood is collected. The animal is next cut up and, after
this has been done, the liver is roasted and eaten by the
men. The skin, if suitable for the purpose, is cut into
[237] sandals, bowstrings, etc., on the spot. The meat is then
removed to the *//gãus* by the men who may occasionally be
assisted by the women. On arrival at the *//gãus* all the meat
is laid on the ground under the *!heis* either on sticks which
were used in carrying it or on branches. The *gei-khoib*
224 (chief) now comes forward and if he finds that the *!hei-/ais*
622 (fire under the tree) has gone out he returns to his hut, brings
252 fire and wood and re-lights it. If he is absent when the meat
is brought in he is immediately sent for, the meat in the
meantime being hung on the *!heis* (tree in centre of camp).
After having kindled the fire the *gei-khoib* instructs one of
the men—the one who has shot the animal is excluded from
doing any work—to open the bones and collect the marrow.
The blood and the marrow are placed on the fire in separate
pots and at the same time some of the meat for the men is
also cooked. As soon as the latter is ready for eating the
gei-khoib removes a piece from the pot and "tastes"
(tsũ-tsũ) it. This is done by holding it between the teeth
and fingers and cutting off and eating a morsel or two. The
meat is now safe for the members of his group to eat. The
cooked meat is then pounded with a stone, teased between
the fingers and thrown into the pot containing the blood.
The melted marrow is next stirred into the mixture of blood
and meat. The resulting dish is known as *≠koms*.

224 All meat killed with bow and arrow is *soxa* and may not
262 be partaken of until it has been tasted by the *gei-khoib*. The
liver, however, is eaten by the men immediately after the
animal has been cut up and is thus excluded from the scope
of the *soxa* as far as men are concerned, but to the women it
is *soxa*. All parts of the animal are eaten, but certain
categories of people may eat only certain prescribed portions
of the animal, the rest of the meat being *soxa* to them. For
example, the wife of the man who killed the animal is
entitled to the superficial covering of meat and fat of the

hind quarters, the entrails and the trotters (*‡ei-ti*). Her 224
portion is known as the *‡noe-di* and is the only meat which 262
may be partaken of by women. The *‡noe-di* is shared by her
with the other women, including the *‡kham-khoidi* (adolescent
girls) and with the young children. The *‡noe-di*, however,
may not be eaten until the *gei-khoib* has tasted the meat.
It is cut on the spot where the carcass was found by the person
who shot the animal and handed over to the latter's wife after
arrival at the *//gãus*. It is not brought under the *!heis*.
It is cooked by the wife of the hunter on the fire in front of
her hut after which the other women come and get their
portions and eat it in their own huts. The *‡kham-khoidi*
obtain their meat from their respective mothers, as also
do young children still living with their parents. If women [784]
partake of any other meat than the *‡noe-di*, the poison of the
arrow will not act when an animal has been shot. The
meat which may be eaten by the *axarogu* (youths) is known
as *!om-//gani* and includes the flesh of the abdominal wall,
kidneys, etc., and the genital organs such as udder, testicles,
etc. It is prepared by the *axarogu* themselves over their own
fire at the *axarogudi ‡gaos* (young men's hut). The person
who shot the animal receives the ribs and shoulder blade of
one side. He may prepare his portion either under the *!heis* [252]
or over his own fire. The ribs must be cooked and the
shoulder blade roasted because they taste better when done in
this manner. The rest of the meat is *soxa* to him and if he [784]
eats any other part, *e.g.*, the *‡koms* he will not meet with
success in hunting because the poison will weaken and refuse
to act. The parts of the animal which go to the *gei-khoib*
are known as the *so-eis* and include portions about two finger
breadths in size from each quarter, from each side of the
back and one rib from each side. These are strung on a
thong or cord and hung up for his sole use. *So-eis* may,
however, be shared by him with a visiting *gei-khoib*. The
gei-khois receives her share from the *‡noe-di*. The *gei-khoib*
may also partake of the meat for the remainder of the men
called the *so-//gani*, under which is included the *‡koms*.
The latter may be eaten only under the *!heis*. After it has [264]
been prepared each man brings his wooden bowl or other
receptacle and helps himself. Any man whose wife is [841]
menstruating will, however, not partake of the *‡koms* as it
contains blood. The rest of the meat is divided among the
men by the *gei-khoib* and is prepared and eaten at their huts.

A similar procedure is adopted in connection with meat 224
killed by the members of an outlying *//gãus*, the *gei-khoib* 622
likewise having to taste it before it may be partaken of. He
may either proceed to the *//gãus* concerned, or if the distance
to be travelled is considerable, all the meat will be brought
to his *//gãus*. In all such cases the *so-eis* is brought to him
by the messenger sent to notify him of the kill. When he

224 visits a *//gāus* for this purpose he kindles the *!hei-/ais*
622 with fire from one of the huts, and, after having tasted the meat, returns to his own.

224 Any want of success in the chase is generally attributed to
777 some chance incident. For example, a man, who has had bad luck in hunting while his wife had her periods, will not hunt again when she is in that condition nor will she eat any of the *≠noe-di* at such times. The meat of an animal
262 killed by a dog may not be eaten by women or by any men whose wives are menstruating. This prohibition is to prevent bad luck befalling the dog in the pursuit of game. If, however, an animal is killed with bow and arrow after having been brought at bay by a dog, the meat is *soxa* and women may eat the *≠noe-di*. The remains of an animal killed by a lion are not *soxa* and may be partaken of by all individuals. Care, however, is taken not to offend the lion which likewise observes certain practices after each kill. After having had his fill he buries the sacrum and haunchbones and covers them over with the dung (stomach contents) of the animal. If he should be unsuccessful in hunting his prey he returns to the spot of the last kill, digs up the buried parts and inters them in another place. This he does to restore his luck and if he should find that the bones have been taken away he will follow the person who removed them right into the *//gāus*.
184 *Soxa* applies only to meat killed with bow and arrow and
224 as far as is known at present this practice exists among the
262 *Nom-khoin*, */Koma-khoin* and *Go-gara-khoin*. Among these
784 groups the meat of the following animals is *soxa*, namely, steinbuck, duiker, springbuck, hartebeest, gemsbuck, kudu, wildebeest and giraffe. The eland, which is a comparatively rare visitor to the parts occupied by these groups is not killed at all by the *Nom-khoin* who believe that harm will befall any person who eats its meat. In other words the *Nom-khoin* consider the eland to be absolute *soxa*. Among other groups the man who shoots an eland must, on returning to the *//gāus*, sleep under the *!heis* as intercourse with his wife will prevent the poison from killing the animal. The same applies to a person who shoots a giraffe.

412 The implements and utensils which are used in the collection and preparation of food are very few in number. Vegetable food is dug up with a sharpened stick, 2 to 5 feet in length.
252 Ointjes, *//nōun* and other similar plant foods are roasted in hot ashes covered with cinders. Ants (Bushman rice) are dealt with in a similar manner and then recovered again by means of a sieve of grass matting. Locusts are either roasted or boiled. Frogs, etc., are sometimes roasted over the fire on a wooden spit (braaistok) stuck into the ground. Birds, snakes, small antelope, etc., are prepared by placing them in a hollow made in the ashes with a flat paddle-shaped wooden scoop and covering them over with live coals. The meat of larger

animals is either cooked or roasted. Among the tame partly 252
disorganised groups any sort of receptacle such as a paraffin
tin serves for cooking purposes. The more primitive groups [437]
use clay pots bartered from the neighbouring Bantu. Roasted plant food is eaten whole or in the form of soup or porridge after being pounded up in a wooden mortar or on a stone and mixed with boiled blood.

Food is eaten direct from the pot or from bowls made of 264
wood or the hide of big game. Many groups nowadays make 415
wooden spoons. Generally, however, either the hands or tortoise-shell spoons are used in eating.

Every part of an animal is eaten or made use of for some 184
purpose or another. Nothing is allowed to go to waste except 262
by those groups which, through possessing dogs, find it comparatively easy to kill game. The camps of the latter are generally littered with bones, etc., whereas among the wild Bushmen even the bones are broken up and eaten. In the case of small antelope when for any reason the skin is not suitable for other purposes it is roasted with the animal and
eaten. Small skins are used for karosses, food and tobacco 237
pouches, quivers, loincloths, etc. From the skins of big game on the other hand sandals, blankets and, among certain groups,
bows, quivers and bowstrings, are made. The */Nu-//ĕin* [184]
and *//Aikwe* are more expert in preparing skins than the
ǂAo-//ĕin and other tribes living to the north. Articles [438]
made by the former form an important medium of exchange. The sinew is used for making bowstrings, for reinforcing bows
and arrow-shafts, and as thread for sewing skins. From it [482]
also is made the string of the nets in which the Kalahari groups carry their belongings. In the Kalahari the foreshaft and tips of arrows are made from the long bones of the ostrich and various kinds of big game. Bones are also made into knives, awls, pipes, etc. The horns are manufactured into spoons, whistles, small quivers for carrying arrow-tips during the rainy season, implements for stripping the fibre required
for snares, artificial leeches, etc. The stomach of large [415]
animals when not required for food is fashioned into bags for collecting the blood and for carrying water. Ostrich egg-
shells are used for carrying and storing water and for the [301]
manufacture of the eggshell beads which at the present time 438]
form the most important article of barter among the */Nu-
//ĕin, Kaukau* Bushmen and *Hei-//om.* Among the most [184
northerly groups on the other hand arrow poison and red [278]
ochre, obtained from the wood of the *omŭra* tree, are the 438]
principal media of exchange.

RELIGION.

The purpose and scope of the present report do not permit 121
me to deal at length with the multitudinous magico-religious beliefs and practices with which the lives of all these primitive communities are surrounded.

137 is one it is the biggest thing in all the landscape, dominating all the veld, more impressive than any mountain. It can be as much as two hundred feet high and thirty feet in diameter. It has great, thick branches that sprout haphazardly from the sides of the trunk and reach like stretching arms into the sky. The bark is thin and smooth and rather pink, and sags in folds toward the base of the tree like the skin on an elephant's leg, which is why a baobab is sometimes called an elephant tree. Its trunk is soft and pulpy, like a carrot instead of wooden, and if you lean against it you find that it is warm from the sun and you expect to hear a great heart beating inside. In the spring, encouraged by moisture, these giants put out huge white flowers resembling gardenias, white as moons and fragrant, that face down toward the earth; during the
262 summer they bear alum-like dry fruits, shaped like pears, which can be eaten. In the Kalahari there is no need of hills. The great baobabs standing in the plains, the wind, and the seasons are enough.

132 Usually in the hot months only small winds blow, leaving a whisper of dry leaves and a ripple of grass as though a snake has gone by, but occasionally there is a windy day when all the low trees of the veld are in motion, swinging and dipping, and the grass blows forward and back. When there is no wind, heat accumulates in the air and rises in thick, shuddering waves that distort everything you see, the temperature rises to 120° Fahrenheit and more, and the air feels heavy, pressing against you, hard to breathe.

June and July are the months of winter. Then water left standing freezes at night, and with the first light of morning all the trees and grass leaves are brittle with frost. The days warm slowly to perhaps 80° at noon, but by night when the sun sets yellow and far, far away over the flat veld the cold creeps back, freezing the moisture from the dark air so that

The Bushmen are one of the most primitive peoples living 105
on earth. Although most of their groups own some metal objects,
Bushmen do not smelt or forge metal, but get it in trade [325
from their Bantu neighbors. They use soft metal in the making 439]
of a few tools such as knives, arrowheads, and little axes,
cold-hammering the metal into shape themselves. Bushmen
make the other tools they use from wood and bone, grass and
fiber, the things of the veld. They dig roots and pick berries [223]
to eat because they have no crops. The desert is too dry for
anything but desert plants to grow naturally, and Bushmen,
who quickly consume all the wild food available in one place,
cannot stay anywhere long enough to tend crops or wait for
them to grow.

There is not enough water to water livestock, and for this [231]
reason Bushmen have no domestic animals. Most of their
groups do not even have dogs. Instead of herding, Bushmen
hunt wild antelope with tiny arrows, sometimes made of soft, [224
traded metal, sometimes made of bone, and poisoned with a 278]
terrible poison extracted from a certain grub, a poison which
affects the nervous system of a creature and which is so deadly
that an antelope shot early in the morning with a single arrow
well placed in the body dies within the day. Hunting is very
difficult, for travel in the veld is thirsty and rigorous and the
antelope are clever, but as often as not the Bushmen hunters
shoot one and then they use it all. Most of the meat is dried [251]
to preserve it, causing it to last at least a few weeks, but
sooner or later every last bite of it is eaten, even the mucous
lining of the nostrils and the gristle inside the ears. They [262]
sometimes eat the hide, sometimes work it into leather to
use for clothing, and if the antelope bones are not all [281]
cracked for the marrow, pieces are worked into arrow points
to shoot another antelope.

In order to live as they do, Bushmen must travel through 105 361

that white people used to hunt Bushmen and wanted to kill 159
us for our land. The farmer took me to his farm and I pulled 563
weeds and watched his cattle. He gave me milk and corn- [465
meal, but I didn't like it. I told him milk was for babies and 262]
I wanted him to take me back to my country, but he laughed
at me.

"He called me Goliath because I was so small. Goliath, come here. Goliath, watch my calves. And later he gave me a shirt to cover my body and then I went to work for another master, who gave me a goat, and then I worked for my [465]
last master, who paid me shillings. But I am leaving here too because in South-West Africa they pay better. I am a father now, you know."

The day Tami left, I walked over the veld toward a road to say good-by to him, and when I got halfway there I found that he had come halfway to say good-by to me. He was holding his goat by the horns, and behind him his wife, wearing a horrid rag of a European dress, was standing with the baby inside the front of the dress. I gave Tami a knife and his wife a scarf of mine, although I had nothing to give to the baby, and they said good-by to me and turned, Tami dragging the goat around, pretending to be very jaunty, and they set out walking toward the road that leads to South-West Africa.

Times have changed since Tami's father died. In those 648
days, to be sure, there was a great deal more friction between Bushmen and non-Bushmen than there is now because the Bushmen who lived near the farms of European or Bantu farmers quite often killed cattle. It is sometimes said that they did so because they were unable to distinguish between cattle and wild game, or that the cattle drove away the wild game so that the Bushmen would have had no meat if they had not killed the cattle, but I very much doubt that either of these things was true. Most probably, the Bushmen found

152 The Bushmen as well as the gods ignore the suffering of
animals. When they opened the pit and took out the tortoise
264 several hours later it did look delicious, and the meat, which
came easily off the small, thick bones, smelled delicious
brewed in the green leaves, and the thin young boys smiled
happily and brought their tsama rinds to be filled from the
mortar where Gai put the pieces he had picked off and had
pounded to make them even and small.

262 While there was gemsbok meat and tortoise meat, the rabbit was not worth eating, and it hung from the tree, where it dried, like a little husk, to be moistened again and eaten when nothing else was left. It swung in the breeze like a leaf, like a tiny, eerie ornament.

252 The lizard was eaten that evening by the three young boys,
264 who built a fire of their own, where they sat like hunters back
from a hunt; with the red light of the fire on their thin faces,
making their eyes bright, they roasted the lizard in the coals
and ate it, and pulled its tiny bones out of their teeth.

ing great carcasses of fallen trees, some with the leaves on the 731
top still green, that were filling the air with the smell of their
wood burning. The ground was still warm to walk on, but all
the bushes, all the little succulents, all the vines that marked
the water roots were gone; no snake or lizard or animal was
there, all were burned or had gone; we saw only animal tracks
half filled with ashes, and a few birds come to eat dead in-
sects. We saw a pair of secretary birds and later a pair of [136]
paouw, huge gray birds that walk more than they fly, wan-
dering through the ruins looking for dead reptiles.

As we walked, fine black powder rose to dust our legs, and
now and then, off through the standing tree trunks and be-
tween the fallen trees' great upflung roots, little whirlwinds
crossed back and forth, raising the dust in spiraled pillars. [821-
Bushmen say that whirlwinds show the presence of the spir- 775]
its of the dead.

Witabe's eyes searched over the ground, and when he saw 222
a small mound of earth he walked up to it and punctured it 262
with his toe. Out rushed a horde of ants, which had been safe in their tunnels when the fire passed and now began at once to repair their damaged mound. Witabe crouched among them and began to pick and eat them, selecting the soldier ants, ones with large heads and heavy jaws. He bit off the abdomens, tossing the heads away. Presently he offered some to us, as I had feared he would; as everyone else ate one, I did also, and found that it was not too unpleasant but sour and very watery, very like a blackberry before it is ripe. The workers, I am told, are tasteless, but the fighters are considered a near-delicacy; mine opened her jaws wide to fight my thumb before I ate her.

Later in the day, when the sun in the sky, the still burning 481
trees, and the fire-warmed sand made the air on the flats un- 487
bearably hot, we turned back to camp for the shade of our

576 show affection openly only to people of the same sex and
593 to their children. Tsetchwe looked at Gai, though, and she smiled.

124 Twikwe greeted us by smiling her wry smile and saying:
825 "So."

262 The springbok was thrown to the ground, but before it could go into the pot, Bill Donnellan, the doctor, came over to the werf to dissect it, this being an opportunity to find what the Bushmen thought about the systems of the body and what they knew about anatomy.

Gai agreed to tell what he knew, so the springbok was dragged to a sandy spot and a small fire was built—just two crossed sticks with one or two coals and a tiny flame, yet it warmed us, as the evening was becoming very cold. All the people sat around to watch as Bill opened the belly of the springbok and rolled it onto its back. He pointed to the diaphragm and asked what it was. Gai told him the name. "What is it for?" Bill asked.

"We eat it."

"Is it for anything else?"

"We don't know. We just eat it."

"What about the liver?"

"We eat the liver."

"Does the liver do anything for the springbok?"

"It stays there and then we kill him and eat it."

"And what about the stomach?"

"We Bushmen eat the stomach, too, and all the things in the springbok."

"Doesn't the stomach do anything for the springbok?"

"Yes, he eats grass which goes in there and makes him fat, and then we eat the fat."

124
825 Unwilling to give up easily, Bill passed on to the urogenital system, which is, after all, exterior and which anyone should

enclosed in the tiny brown pupa casings with brittle shells 825 like eggshells, exactly the color of the earth around them, and 278 are found only among the roots of certain trees and bushes. Nothing edible grows among the roots, and although the marula kaffra has edible nuts that drop and are gathered from the surface of the ground, there would be no likely reason for Bushmen to be digging there. Bushmen do eat certain beetles, [262] certain ants, and certain caterpillars, which, they say, are sweet as honey, but even if a Bushman were to eat a poison beetle he would not die (unless he had a cracked lip or an ulcer) because the poison works only in the blood stream, and even the black meat of an antelope taken from the site of the arrow wound can be eaten with impunity.

Only people who pay the closest attention to every tiny object and who investigate all its possibilities could ever have discovered a thing like this.

I not only do not know if the beetles used by the Kung are the same kind as those used by the Gikwe; I also do not know if the Kung use only one kind, for I have seen Kung Bushmen take two kinds of pupa from the roots of the same tree, from cocoons that appeared to be exactly alike. Even the Kung do not know, when they see a cocoon, which kind it is. One kind of pupa is small and pure yellow with a black head, a thorax, an abdomen, and six small legs. The other kind is larger, fatter, and orange, with no noticeable body sections such as thorax and abdomen, but more like a caterpillar, the same all the way down. The yellow pupae, the Bushmen say, are males, with sacks of poison only under their front legs. To get the poison Bushmen pull off a leg and squeeze out a single drop, discarding the rest of the body. The orange pupae are said to be females, with poison throughout the entire body. To get poison from these, Bushmen tap the grub all over to

On the way a moving shadow caught our attention, and we looked up
to see a white-breasted, black-winged vulture sailing not far 222 136
above our heads, not stirring himself but riding the drafts
and currents of the air. He was looking at us with hard eyes,
his red face turned to look down, and suddenly he closed his
great wings under his body, sweeping them down so far that
the long wing feathers brushed together four feet under his
belly. Then his wings swept up again and bore him on. I had
never seen a vulture do that before. He did it only once, then
made a circle all around us, looking down at us, his eyes cool
in their red wrinkles; he rose higher and higher and soon he
was gone. All over Africa the sky is full of vultures, but so
high that you can seldom see them; any time you look up
with binoculars, however, you will probably be able to see
one sailing, waiting up there for a disaster.

We were going particularly to look for *bi*, a fibrous, watery 222
root that is the mainstay of the Bushmen's diet during the 136
hot season when the melons are gone. From the end of Au- 262
gust, when the spring begins, the heat increases in intensity
until December and January, when the rains come, relieving
the drought. During this hot, dry season the sand reflects the
sun until the air all over the veld shudders and dances, until
human beings and animals alike gasp for air and water. This
is the hardest season of all for the Bushmen, yet most of
them remain alive by going into the veld early in the morning
in the cooler light of dawn to gather bi. The bi they find is 222
brought back to the werf before the sun is hot; it is scraped, 271
and the scrapings are squeezed dry. The people drink the 237
juice they squeeze. Then they dig shallow pits like graves for
themselves in the shade. They urinate on the bi scrapings and
line the pits with the now moist pulp, then lie in the pits and
spend the day letting the moisture evaporating from the urine
preserve the moisture in their bodies. They lie still all day and 222
at dusk go into the veld again to gather food, perhaps a few

9: Thomas T-5 (1951-1955)1959

FX10 Bushmen FX10

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Ukwane eats a tsama melon, the source of food and all water for Bushmen during the drought.

[p. 112(c)]

574 do not meet very often, and when they do the children play
621 together day and night. All the young boys were extremely
857 happy to see each other and expressed their joy by starting their game at once, wasting neither time nor breath to say hello. Before the adults of the visiting band had set their bundles on the ground two little horses with their riders had run past, the riders trying to unseat each other.

574 They played all afternoon and into the evening while the
621 adults went about the business of setting up a camp. I went
361 to the new werf to watch and found that the women had stored away their belongings, stuffing some of their bundles among the tree roots, hanging others from the branches, and were now clearing grass, each woman clearing a small circle for her family. Soon five circles were formed, not quite touching, all sheltered by the branches and all in the space of a few square feet. I helped one woman pull grass, for she was clearing it tuft by tuft, pulling it up with her hands, and as I did this I felt something cold and firm in the grass I was holding, and, looking down, I saw that I was holding an asp. I dropped it, one of the Bushman men ran up to kill it, and one of the
[20] women lifted it between her fingers and placed it in her kaross. Later it would be cooked and eaten by a child.

224 That same afternoon, some of the members of our expedi-
574 tion went hunting and shot a gemsbok, which was brought back to camp and given to Ukwane to divide. This was, perhaps, a great mistake on our part, for Ukwane gave the entire carcass to the newcomers except for the head, one foot, and a little of the liquid from the rumen, which he kept for his own people. Twikwe dug a pit in the veld and roasted the head in it, and that night, while the newcomers were still butchering, drying, and cooking their larger share, the mem-

bers of Ukwane's band cut little strips from the cheeks of the 224 574
gemsbok and sustained themselves with that.

An atmosphere of tension and strain pervaded over the 574 578
whole werf. The Okwa people had arrived primed with jealousy, and had surely accused Ukwane of selfishness; the false spring, the dry conditions at Okwa had surely given their jealousy momentum. By giving most of the gemsbok to the newcomers, Ukwane had done all he could, for he had shown with his immediate generosity, and with the magnitude of his gesture, that they had nothing to fear from him. Of course, the members of his own band were as jealous of the newcomers as the newcomers were of them, but Ukwane surely felt that the internal struggles of his own band, easier to cope with, would be forgotten sooner.

The tension showed itself in struggles over food. Twikwe 262● 578 152
made a soup from a bone of the foot, mixing it in the rind of one of the melons she had gathered, and when it was cooked she drank it herself out of the tsama rind, watched all the time by her son Wite. When she could stand his hungry eyes no longer, she put her bowl on the ground so that both of them could scoop up the broth with tortoise shells. After they had eaten part of it, Twikwe decided that it was time to pass the bowl to Kutera, who sat a little distance from them, eating nothing, looking very scrawny and trying not to watch. Twikwe started to do so; then, remembering her son, who was still hungry, she reached behind her for a second tsama rind, a little one, which she would fill for him. In this way she would, of course, have none left for herself, but she preferred to share. Adults are used to hunger, and it seems that the older Bushmen become, the less they mind deprivation. Children are different, and as their needs are considered more pressing than the adults', they are accustomed to receiving

262
578 more. Twikwe herself had among her possessions a fiber
152 string, which, she said, she kept to wind around her belly
[261] when she was very hungry for the purpose of warding the
hunger away.

Wite was tired and cross, and his patience was worn thin by hunger, and when he saw what his mother was doing he realized that he would have less food than he had expected. He lost his temper, shrieked at Twikwe, and tried to keep her from reaching the little rind so that she would have no container to give him a smaller share in—a very Bushman-like thing to do, instead of trying to snatch the large, full rind, perhaps—and the two of them struggled, each tugging at the little rind and each exclaiming wildly. The old woman won the struggle and filled the rind with soup, using her tortoise shell as a spoon, hindered once again by Wite, who snatched the spoon away, still trying to prevent her filling the small rind for him. Twikwe struggled for the spoon, and, seeing that he was going to lose it, Wite quickly ladled an extra spoonful into the little rind and sat back resigned while Twikwe thrust the little rind toward him. He took it finally and sat sulkily, not eating, but with his lips pressed against the side of the rind, his eyes hard and shining, staring at nothing over the top. Twikwe handed the larger share to Kutera, who pretended not to have noticed the struggle and who thanked Twikwe in an ingratiating way.

There was another struggle over food that evening, started as a malicious joke by Gai. When Gai saw Wite with a strip of meat from the gemsbok's cheek he snatched it out of Wite's hand and pretended to eat it. When Wite, tried beyond endurance, burst into tears and flew at Gai, Gai ran away and really did eat the meat, chewing as he ran, keeping just out of Wite's reach. The chase ended under a tree, where Gai, seizing a branch, grappled Wite with his legs and swung

262
him off the ground. Wite did not resist, but swung limp and 578
resigned, and when Gai released him he started to walk away. 152
Gai had eaten all the meat except one morsel, and this he tossed to Wite, who picked it up from the ground and ate it apathetically.

Only the baby set a good example. I had picked him up and 262
was carrying him when the three young boys of Ukwane's band noticed that he was mouthing something and holding something else in his hand. For a joke they extended their palms, telling him to share what he had in his hand, and he gave it readily. It was only the crackly skin that flakes off bones when they are roasted, quite flavorless, impossible to chew; Nhwakwe was only playing with it and the boys only pretended to take a bite, then threw it away. But either the baby didn't see them reject it or didn't care because in a moment he made them another present, the meat that he had been holding in his mouth. The young boys didn't see where he got it and they were about to eat it when Nhwakwe opened his mouth to smile and they noticed. They threw it down, but the baby spat some onto his finger and offered it to them anyway, and when they didn't take it he smeared it on their chests.

After the unhappy hour of eating, the people of Ukwane's band, their appetites dulled even though their bellies were
not full, seemed more relaxed and the young boys went off to 572
join the boys from the visiting band. The youngsters were 857
always friends. The tensions suffered by all the members of 152
both the bands did not affect their enjoyment of each other.

That evening the boys sat down near one of the fires to 578
talk, and they told each other all the things that had hap- 522
pened since they last had met, perhaps a year before. Most of 152
the incidents had happened fairly recently and most amounted to anecdotes about the other members of the

into their scherms, and in the morning there was a lake of 132
shining water on the pan and lilies growing everywhere, where
only their dry leaves had been before.

After that the rain came often. Some weeks it rained a little 132
every day, some weeks the rain became torrential and flattened 136
the Bushmen's grass scherms, but it made the veld rich
and green, with flowers everywhere and all kinds of fruit,
which grew on trees and stalks and bushes. The pan became
the home of shore birds, marabou storks and flamingos. Leopards
and lions drank there, game antelope waded through it,
leaving deep tracks in the mud, and the Bushman children [515
sometimes danced in the shallows, their feet making flashing, 142]
rhythmic splashes, or bathed themselves until their skins were
shining gold.

One night I went to the werf with a lantern and suddenly
found myself beset by insects flying all around me, attracted
by the light. It was the mating flight of white ants, which
had come out of the ground in great numbers and now filled
the air. The Bushman men were away on a hunting trip, unfortunately, [22a
but the women came to the light as quickly as 262]
the ants and began at once to catch them and stuff them into
their mouths, saying "*gurico gum*" as they did so, *gurico* being the name of the ants and *gum* the word used for candy, for sweet gum that oozes from the trees, and for sweet caterpillars. Much faster than the women could eat, more and more ants came flying in a swarm as thick as a blizzard and already the ground was white with wings, for the ants, throwing themselves to the earth, would drop their wings instantly and begin to mate with each other in twos, in threes, even forming in great circles that turned as the ants ran scurrying to keep their positions, each one mounted with its forefeet on the back of the ant before it, pushed on by the ant behind. Sometimes an ant would fail to shed its wings and, finding

green-leafed vegetables, and sometimes many of the people 361
of the large extended bands come together to live, to hold 621
important ceremonies which require many people, and to enjoy
each other's company. Sometimes they separate into very
small bands because they can now go anywhere they wish,
each family going to the part of the veld where the type of
food grows that the family most enjoys. There is water everywhere, 312
in small seasonal waterholes, in shallow salt pans, in
hollow trees, and the people thrive and grow quite fat. One
of their favorite foods, one that grows in great abundance at 222 262
this season, is a ground nut called *tsi*, which grows on a
trailing vine and is so fat that if you leave a kernel of it on
a piece of paper it will leave a greasy stain. Tsi is regarded by
the Kung Bushmen as a very powerful food, one of the powerful [778]
veld foods in which there is a special essence, something
mysterious and magic which gives them a life force all
their own so that it would be dangerous to eat them during
the year if this life force were not first subdued or not first
integrated with the life force of the people. These foods are 778
the mainstays of the Bushmen's diet, and are fat; and every 789
year people in their child-bearing years, when they consider
themselves subject to harm, protect themselves against these
foods by a ritual act.

The act of protection is called *choa*, and it is interesting
because it differs from the protective rituals performed by agricultural
peoples to save their crops or animals from harm,
or to cause their increase. The Bushmen choa themselves not [842]
to protect their fertility, for decrease in the number of children
is not a problem to them, but to make sure that they,
the young adults and mainstays of the community, will not
get thin and starve.

Those whom Bushmen call "old people," adults who have 789 885
had three children, are expected to protect themselves and .
also to protect young people of the same sex.

789 also to protect young people of the same sex. The choa ceremonies are performed in the Veld Food Season for each of the powerful veld foods as they ripen. The ceremony itself is simple; in order to choa tsi, for example, an old woman simply chews a mouthful of tsi with a few bites of a root called *shasha* if shasha is available or any one of certain other permissible roots if shasha is not, and spits the resulting paste into her palms. If she is choaing herself she washes her hands in the paste; if she is choaing a younger woman she rubs the paste on the young woman's arms and chest. It is an important ceremony, for no young person would think of eating tsi without it, but it is at the same time a casual, household ceremony, done without fuss or audience; oftener than not, it will be performed in the morning before breakfast, say, or when the woman is resting for a moment in the veld, ceasing her digging to drink a sip of water. It is a powerful ceremony, though, for the woman choaed may then eat tsi in safety for a whole year, until the next season when it ripens again.

731 That year, in the Veld Food Season, there was a tragedy and also a wedding. The tragedy took place late one afternoon when a baby girl, playing house with a real fire, burned down her grandfather's grass scherm, thus destroying everything her grandparents owned, everything they had made over a lifetime. The two old people had been very industrious and the wife a prolific maker of ostrich-eggshell beads.

At the start of the blaze a great crowd of people gathered, arriving just in time to see the baby girl run out of the scherm as it collapsed in flames behind her. She ran straight to her
[262] mother and sat at her feet, ignoring the great crowd of people and placidly eating one of her grandfather's leather sandals which she had rescued from the fire and which, she found, had been cooked to a turn. No one was angry with the child,

chance to look at everyone else and see who was there, we 621
found among the Bushmen one entire band, six people, who
once had lived at Gautscha. These were an old man, his two
daughters, his son, his grandson, and his son-in-law, a man 551
named Lazy Kwi. Because Kung Bushmen have relatively
few names in use, resulting in the fact that many, many people
have the same name—one man we knew had two wives
named Kushe and two daughters named Xama, called after
his mother, whose name was also Xama—they distinguish
their various Xamas and Kwis with nicknames.

Lazy Kwi was a kind, warmhearted man, devoted to his
family, and was named Lazy, an insulting name, only because
he was not a good hunter. He was heavy-footed, therefore 224
noisy, and not an excellent shot; but he was a good trapper 262
and got meat for his family by snaring birds and lizards.
But because he did not hunt he never owned large shares of
meat and ate only what came to him by the Bushmen's system
of dividing, which put him in the role of poor relation
and sometimes forced him to eat what others would not
touch. Once he had suppressed his pride and eaten a badger.
Although the other Bushmen had turned up their noses at
this rank meat, he had said: "I am the badger-eating man,"
laughing off their scorn to hide his shame. He had eaten it
sadly, and the sweet taste of it had sickened him and had
made him vomit and retch for the rest of the day. Luckily for 224
his family, his father-in-law made beautiful arrows and in the [411]
hunting system of Bushmen the man who gives or lends the
arrow with which a buck is shot is automatically the owner
of a large share of the meat. His father-in-law often lent arrows
and often got meat. In fact, the old man had a dominant 888
voice in the running of the family, for though old men 621
may be aged and consumptive, those younger than they do
what they say. Far from being derogatory, "Old" is a term of

222 the smoke had confused them and they did not sting, although they flew everywhere looking for us. The old man turned his back, hunched his head between his shoulders, and hid from them as one would hide if one were being pelted with stones. When the swarm had dispersed a little he finished the opening. The Bushmen say that when bees are disturbed they are vicious only at first. After a while they become disorganized and confused and they fly about but do not sting you. When you smoke bees you must be careful not
[778 to burn them or smoke them too much because they are
825] magic creatures with medicine to control fire, and if you harm them they will cause fire to burn you. A young boy whom we knew once burned some bees, and that night, when he was asleep by the fire, the fire sought him out and burned the skin of his belly, touching him only and no one else.

Lazy Kwi and the old man did the work perfectly. They were not stung badly, the tree was open, and no bees were seriously harmed. Inside the tree we could see the brown combs hanging and the bees as thick as fur around them. Lazy Kwi took out the combs and put them in a wooden bowl, licking his fingers afterward, and before we went back we ate some of the honey. There were two kinds, old honey and new honey, and the new honey was pale yellow and very
[262] sweet and mild, winter honey made from the small, dry flowers of the veld. The old honey was much sweeter and strong enough to burn your mouth. Before we left, the old man
[515] and Lazy Kwi carefully wiped their hands and arms with grass, for they were covered with honey and things were beginning to stick to them. Then we went back to camp and in the afternoon we packed to go on toward Gautscha Pan.

415
482 Lazy Kwi packed a skin bag full of tsi nuts and the seeds
[222] of baobab fruit, alum-like powdery stones that ripen at the start of the dry season. The old man had a huge net bag filled

133 136 was coming from it, and though the adult Bushmen knew what to expect and didn't waste time investigating, only pausing for a moment at the brink to glance inside, then going on, the children stopped to gaze and I stopped with them. The sides of the well overhung the water in a lip about four feet high. The water itself was the color of clay, and on its smooth surface a hairy back and a pair of pointed ears were floating, the back and ears of a drowned hyena floating on its belly with its nose pointing straight to the bottom. White maggots crept from one ear to the other and the rotting smell rose from the corpse. Obviously, the hyena had been thirsty and when trying to drink had fallen in and drowned. A little boy who was watching the hyena, fascinated, began to howl faintly, "Mmm//ao, mmm//ao," the way a hyena howls, but putting a click in it the way Bushmen usually do, and then for my benefit acted the scene as it must have taken place. He rolled out his tongue and edged his hand toward the lip of the well, then jerked away, staring at the water with yearning eyes and saying: "No, I can't reach it. Yes, I must." He edged his hand toward the lip again, then shrieked "Ai! Ai!", waved his arms, pawed the air as the hyena had pawed the sides of the well, twisted his head from side to side, eyes starting, then closed his eyes and let his head roll back, his face calm and his lips parted, turning his hands limply, palms up. "Finished," he said.

"Yes," I said. "Too bad."

● [262] "Oh, hyenas are worthless animals," he said. He meant that they were not good to eat. Then he ran off and after a short time came back with a long stick, which he pushed into the water. "Help me stir," he said, so I did, and presently the carcasses of two wild dogs and a vulture bobbed to the surface, rolled over slowly, legs in the air, and sank again. "You see?" he said triumphantly. "Many things die here."

still there. Bushmen do not eat squirrels because squirrels 224
have no meat on their bones. Birds of all kinds lived in the 136
great tree too, and there was a hawk's nest in the upper [262]
branches; I once had seen the two gray hawks that built it, but now they too were gone.

It was the bees that interested the Bushmen, though, and 222
those of us who had come from Nama—Toma, Gao Feet, Crooked Kwi, Lazy Kwi, my brother, and I—sat among the rocks at the foot of the tree, the men planning what they would do. I was so tired from having been awake all night to watch the dance that I lay down on the stones and fell asleep, and when I awoke, in an hour or so, the men had built a fire but were still arguing about who would brave getting stung to find the honey. No one really wanted to do it; but I saw that Crooked Kwi was almost persuaded, being very amenable and the youngest person there. Sure enough, taking a smoldering brand in his teeth, he at last began to climb the pegs, clinging to them with his fingers and toes. Toma followed at a distance, cautiously, urging Crooked Kwi on, and the two climbed higher slowly, Crooked Kwi looking down from time to time to be encouraged. When he did, Gao Feet and Lazy Kwi would shout for him to continue. At last Crooked Kwi reached the branch beside the hive and squatted there, blowing on his brand to make it smoke while Toma climbed past him, around to another branch, where he, too, squatted with his feet apart and his hands on his knees exactly as though his feet were on the ground, the branch was so wide.

Crooked Kwi found the hole, a small opening, though even from the ground we could see a few bees humming idly outside, and blew the smoke from his brand into it, then, encouraged by Toma, reached his slender arm inside to find a honeycomb. He was stung, of course, and snapped his arm out instantly, though even then the bees were not angry, None

132 LATE in December or early in Janu-
ary the rains of summer—the "big
rains"—begin. This is the season of
water. Water collects in the hollows
of the land; it seeps into the pans,
changing them into shallow lakes; it
melts the baked clay in the *omuramba*
bottoms, and turns the Kalahari green.

132 This is the season when two nuts,
the *tsi* and the *mangetti*—the most im-
●262 portant and abundant of the wild
desert foods—begin to mature. By
137 March, the *mangetti* forests sound with
the falling nuts. Beside the summer
storms—when water piles up uselessly
on the reverberating earth—days on
end are cloudy and, sometimes, a fine
mist falls over parts of the north-
ern Kalahari through the day and into
the night. Now, the people eat many
fruits. In the deeps of green thickets,
[164] ponderous flowers droop on slender
vines. Spring and summer, the times of
bounty, are also the seasons of disease.

132 By the end of April, the afternoon
skies begin to clear, the air dries, the
wind seeks. It is autumn. In April,
the *tsi* nuts ripen and the pods split,
turning out their brown wealth. The
many desert roots cease their activity
and become firm and full, safe in

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Delousing is a courtesy among kinsmen: the salty-tasting lice are eaten.

361 342 There are about 1,000 !Kung—gathered into 28 bands—who build their ephemeral camps, or *werft's*, separately in an area of 10,000 square miles. The houses in the *werft's* are of grass, pressed over a framework of sticks, making small quarter-shells, with their backs to the prevailing wind. Gossamer things, made of the same grass that sways and crowds against their doors, they are positioned in a loose pattern according to their occupants' kinship, and all are [622] held—finally—by the headman, who builds his shelter under the tallest tree.

From a little distance, when the sound of voices is lost on the wind, one would not know a *werft* was near. The people never return to the same *werft*—preferring to build anew and saying it would not be safe from the spirits of the dead, or sanitary, to do so. Perhaps, also, they find it sad to see the little houses toppling, day by day, into the grass of the new year.

462 As a starting point, labor among the !Kung is divided between two basic subsistence activities—hunting game and gathering *veldkos*. Men hunt, because their bodies are better suited to the chase. Women gather, because they could not leave their children for the long periods of hunting that men both enjoy and endure.

222 Women's work—the technology of gathering—is simple and adaptable: the tools are easily acquired, the methods quickly learned. The constant necessity to provide and the almost daily edge of effort slowly bends the

224
278 the point, for the slightest prick, the
411 least bit of poison getting in such a
wound, would cause death.

Depending on where the poisoned
278 arrow hits, a small buck can die in
224 a morning, a man in a few hours,
a giraffe in four to five days. There
[752] is nothing that can be done for a
man, short of amputating a limb or
immediately excising the wound and cutting the nearby flesh to let the blood drain. Yet, the poison has no effect upon the game's meat. One can even eat the mixture with relative impunity: it must enter the bloodstream directly to be deadly.

224 As subsistence activities, the men's
and women's roles—hunting and
● 262 gathering—are of unequal weight. Almost eighty per cent of the people's food is *veldkos*, more abundant than game in *Nyae Nyae*, and far more easily acquired. If from one summer to the next, a man kills twelve antelope, he feels he has had a good year.

224 But, despite its relatively minor
subsistence value, hunting is extreme-
182 ly important in !Kung culture. It has
developed its body of technology, acquired a large tradition of beliefs, fostered a wealth of knowledge, and

Meat from the chase is shared by all among the band. An old woman, *below*, is skinning her portion of an ostrich.

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● [621
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578]

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become both the measure of a man's ability and a test of his readiness to marry. Part of the explanation may come from the passion in hunting. Like their fires, the tales of hunting burn brightly for the !Kung in the night, warming their memories. Of equal or greater significance is th !Kung craving for meat and undoubtedly for protein. Unlike the sharing of *veldkos*, limited to the nuclear family, a complex system of distribution insures that everyone in the *werft* will get a share of all game killed. This is done, they say, simply to prevent jealousy and the inevitable renunciations that go with it. The !Kung declare "We are a jealous people" and they try to keep jealousy at a minimum, for they fear it.

Still another aspect of hunting—perhaps the most important in terms of subsistence—is the by-products it provides. Sinew is used for thongs

[p. 56]

182 A lack of permanent water is probably the most trying of the difficulties
312 which beset the Bushmen of the present day in the country which shelters
them. However, it is this very disadvantage which has ensured their survival,
[161] for while they have been dispossessed of their country and exterminated in
[648] the less arid parts, in the "Great Thirst Land of the Kalahari" they have been
comparatively safe from their European and Bantu enemies. The austerity
134 and hardships of the Kalahari are offset to some extent by its deep level
mantle of sand, which prevents run-off of the rainwater and makes it readily
available for plant growth. "Clay, for example, is as dry as dust to the plant
when it contains 18% of water, while most sands are very nearly saturated
with 18% of water" (Schantz 1911). This means not only that the sandy
soil can support more luxuriant plants in greater variety, but also that storage
organs are common among them, for drainage in sand is so rapid and thorough
that shallow-rooted plants at least are in a stronger position if they
are able to collect and store the water before it sinks into the deeper layers.

137 Although some of the storage organs are poisonous, the Bushmen still
have numerous edible bulbs, tubers and roots at their disposal. Thanks again
[222] to the sand, they can harvest these quickly and easily with wooden digging-sticks
which would be inadequate in a heavy or stony soil. Other storage
[224] organs which they do not eat because of bitterness or high tannin or fibre
● [262] content are nevertheless important indirectly through being eaten by the
various antelopes that are the Bushmen's meat supply.

Hunting is easier as well, for as there could be few better tracking surfaces
224 than the Kalahari sand and, as a wounded animal can thus be followed
with very little risk of loss, hard-hitting weapons and careful aim are not
[411] necessary. Instead, the Bushmen use small poisoned arrows which have the
advantage of being effective on any part of the body and of bringing death
as certainly to big game as to small.

101 LINGUISTIC AND BAND GROUPINGS • The major groupings among the Bushmen
197 cannot correctly be called tribes; they are, rather, linguistic groupings
and the names by which they have been traditionally known by Europeans
refer to language: for example, !Kung-speaking Bushmen, Naron-speaking
[829] Bushmen. The Bushmen themselves and their Bantu neighbors use a multitude
of names by which they refer to various combinations of local groupings.
[184] Our own tentative and incomplete comparisons lead us to say that the
language groups differ from one another markedly in some customs while
they are much the same in others.

The language groups have no political unity among or within them-
[621] selves. The only social unit larger than the family is the autonomous band
[622] composed of several families and headed by a headman (see "Political Organization,"
p. 267). Each of the major groupings has many bands within it.

101 The Bushmen whose social structure I describe in this chapter are a
131 group of !Kung-speakers who call themselves *ju /õassi* and who live in the
[192] Nyae Nyae region of South West Africa. It is a region of about 10,000

square miles, centered approximately at Gautscha (about 19°48′30″ S. 181
20°34′36″ E). The region lies for the most part in South West Africa, but 131
extends into the Bechuanaland Protectorate to a number of Tswana and
Herero settlements along the border. We arbitrarily call this particular stretch [123]
of country a region because it is a region in the minds of the Bushmen. In [162]
it are some 27 bands living independently in their own traditional way and [648]
9 groups employed by the Tswana and Herero—a !Kung population of
about 1000. These !Kung intermarry. They have not formally structured the [582]
region as an endogamous unit, but they remain within it by custom and
preference. They know there are other !Kung-speakers living to the north [192]
and northwest of them, but consider them strangers, as they do the Auen-speaking [829]
and Naron-speaking Bushmen to the south.

ECONOMY

It is vividly apparent that among the !Kung 181
Bushmen, ethos, or "the spirit which actuates manners and customs," is survival. 182
Their time and energies are almost wholly given to this task, for life in
their environment requires that they spend their days mainly in procuring
food. The band organization is important to their survival, and, to secure the [621]
mutual support and companionship that it affords, they seek to regulate their [578]
social actions to reduce tension and potential hostility among the individuals
within the band. They also strive to avoid the possibility of conflict between [628]
bands. Similarly, in their religious concepts and practices, the emphasis is on [771]
survival in this life on earth, not a looking forward to the eternal life in the
sky after death.

WILD PLANT FOODS (*veldkos*) • The !Kung of the Nyae Nyae region 433
have no agriculture. They subsist mainly on wild plant foods, which we refer 262 ●
to by the convenient Afrikaans word *veldkos*. The game the hunters of
a band manage to kill is an important part of their diet and much desired,
but it is by no means the daily sustenance. In this region the !Kung know 222
more than a hundred different kinds of veldkos (cf. Story 1958). Several 262
species of berries exist, dry and hard for the most part. A few fruits ripen
suddenly in a short season. Leaves, resembling spinach, make a spring salad
for a short time. Morsels of gums from certain trees are cherished like sweets.
Tsama melons and wild cucumbers grow here but do not abound in this region
as they do in some other parts of the Kalahari where some Bushman
groups can live on them for certain seasons without having access to any
water. Most important to the daily sustenance of the Nyae Nyae !Kung are
the edible underground roots, tubers, and storage organs of certain drought-resistant
plants. We observed the gathering of 23 different kinds of these;
doubtless there are more. In addition to the roots and tubers, there are sev-

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Gathering Mangetti Nuts

222 262 eral large groves of mangetti trees (*Ricinodendron rautanenii* Schinz) in the region, all on great waterless white sand dunes, and one extensive area in which *tsī* grows. *Tsī* (*Bauhinia esculenta* Burch) is the seed of the vine that [782] runs along on the surface of the ground. Both mangetti nuts and *tsī* are excellent foods, rich in oils and proteins, and so important to the !Kung that 621 423 they organize their lives to a considerable extent around them.

Each band, according to !Kung social structure, owns and lives within what we call a territory. The band, through its headman (in a way to be explained later), owns the veldkos and water resources within its territory. The territories are varied in size and shape and sometimes consist of portions that are not even contiguous. The boundaries are vague, for the need [142] to draw fine boundary lines is not great. In the interior of the region, where [162] water is so scant, in roughly 8000 square miles live only 17 bands, comprising 447 persons. The other bands and employed groups live on what we call the periphery of the region. The !Kung say that one cannot eat the ground itself so it does not matter to whom it belongs. It is the patches of veldkos that are clearly and jealously owned, and the territories are shaped in a general way [361] around these patches. The !Kung of the interior have settled themselves in [152] such a way that every band has access to areas of edible roots and to either a mangetti grove or a *tsī* patch. A few bands have both.

423 628 721 The strong concepts of ownership of veldkos by the band operate almost like a taboo. No external force is established to prevent one band from encroaching on another's veldkos or to prevent individuals from raiding veldkos patches to which they have no right. This is just not done. Fear of fighting is one of the deterrents. The poisoned arrows of the Bushmen are as deadly

The poisoned arrows of the Bushmen are as deadly 423 628
to man as to game and they are always at hand. A mere nick and a speck of 721
poison in the bloodstream can be fatal. There are no known antidotes. [811]

As skilled trackers of game, Bushmen develop their powers of visual ob- [151]
servation and train their visual memories to such a high degree that they
know everyone's footprint as well as his face. This is another deterrent, for
no one could steal veldkos without leaving his marks and having his identity
detected. Theoretically, in !Kung society the thief may rightfully be killed by [685]
the person or the band from whom he has stolen, but he may fight back, and
relatives could also become involved and the fighting would spread. In the
opinion of the !Kung, situations likely to engender hostility are assiduously to
be avoided, to say nothing of actual fighting. Breaches of this intention are
very rare.

Life throughout the seasons is planned around the veldkos gathering. 221
The people know at what seasons the various veldkos will ripen and about 222
how much each patch will yield if the rains have been good or if they have [182]
been poor. The !Kung are not, according to our way of thinking, exactly con-
servation-minded, but they do plan to consume their veldkos in advantageous
order. They eat the perishable short-seasoned leaves and the few fruits as [262]
soon as they ripen. They leave until the dry season is advanced certain beds
of roots and tubers that are edible the year around if they remain in the
ground.

The headman of the band has the authority and the duty, according to 622
!Kung social regulations, to plan the band's movements, to say to which 222
veldkos area they will go and when, and, if the band separates temporarily
into segments, to know where each segment is going and, in general, what
veldkos it will consume. It is a matter of life and death to plan and control
as best they can and not to travel for days, counting on food and finding that
one segment of the band has eaten it all, unbeknown to the others.

Each type of veldkos and each area presents its problems of logistics, 222
water being the determining factor in the plans, for usually water and 312
veldkos are not in the same place. During the big rains and for several weeks 221
after, the pans and vleys become shallow ponds and small, temporary water
holes are filled. It is the time of relative plenty. The people find sufficient
water to enable them to move about with comparative freedom in their coun-
try, wherever there is something to gather. When the dry season sets in, [415]
the problem is to carry enough water from the water hole to the veldkos area [237]
in ostrich egg shell containers and to carry enough veldkos back to the water
hole. It is a ceaseless labor.

The distances the !Kung travel between water and fertile areas in these [824]
gathering trips vary from a few miles to twenty or thirty. The people do not
manage greater distances except in the rainy season, when they go as far as
seventy-five miles to a mangetti forest.

When the people go to gather mangettis or *tsi*, the men always ac-

224 meat to the owners of the territory should they happen to encounter them,
[431] but this is a gift, not an obligatory tribute. The vastness and emptiness of
[182] the country allow this freedom in hunting rights and the wandering nature
of the game requires that the hunters, if they are to succeed at all, be free
to look for game wherever they can find it.

222 The !Kung eagerly pick up tortoises, certain kinds of lizards, snakes,
ostrich eggs, and grasshoppers, and they relish termites when these insects
● [262] swarm out in nuptial flight. These items provide incidental delicacies and
gathering them is like the gathering of veldkos. The person who gathers
224 them may keep them for himself and his own family. Men gladly shoot small
223 animals and birds if they happen upon them—wart hogs, duikers, other small
antelope, porcupines, badgers, pythons, spring hares, ostriches, paouws,
guinea fowl, red-winged partridges, occasional migrating geese, and other
birds. They may keep them for their own families. They do not, however,
devote their hunting time to the smaller animal creatures if they find fresh
spoor of the larger ones. Hunting the big game animals that feed a whole
band is the work of a man's prime and is incumbent on him.

224 Hunting parties usually consist of from two to four or five men. A man
cannot hunt effectively alone in this country. Several parties hunting in
different directions are more advantageous than one larger party. Any man
may organize a hunting party, with relatives and friends from his own band
or from neighboring bands—men he likes to hunt with. No one is formally
a leader; the men talk and plan together and are likely to fall in with the
suggestions of the one whom they consider the best hunter. Participation in
any given hunting party is voluntary. What !Kung society urges is that the
[461] hunters hunt; it does not restrict the ways and means. The force of public
[626] opinion upon men not to sit in the werf, not to be lazy but to do their share,
is tremendous.

The game the !Kung hunt deliberately and purposefully are the several
big antelopes found in the region: eland, kudu, gemsbok, wildebeest,
hartebeest, springbok. They also hunt the more rarely seen buffalo and occasionally
manage to shoot a giraffe. Although there is this considerable
variety of kind, there is not a great abundance of game. The herds are small
and the hunts long and hard.* The antelope, because they can go for long
periods without drinking, move and drift about anywhere in the vast
[484] monotonous veld and are very difficult to find. Hunters often search for days, covering
scores of miles, before finding spoor fresh enough to follow, and they may
[411] follow it for days before catching up with the animal. Their little arrows kill
by poison rather than by piercing deeply, and, when an animal is shot, if it
is big, it may wander for three or four more days until it dies of the poison.
[136] Smaller animals succumb in a shorter time. The hunters must track the
animal and find it before the lions, leopards, hyenas, jackals, or vultures devour it.

vour it. Thus, according to our observations, a !Kung band gets on an average 224
only about fifteen to eighteen large animals in a usual year.

The meat of the large game animals does not belong to the hunters to do
with as they choose. However, they always have the prerogative of eating the [262]
liver at the site of the kill and, if their hunger is not satisfied, they may eat
more. The bulk of the meat is then carried to the band, where it is distributed
among the members according to a system. The meat belongs to the owner
of the first arrow that penetrates the animal so that it stays in. He has the
responsibility of making the first distribution.

Anyone in the band may be the owner of the arrow. A hunter carries 224
arrows he acquires in three different ways. Each man has his own that he 411
makes himself, shaping the points with some little distinction so that he 422
will know them from the arrows of other men. In addition he carries 426
arrows that have been given or lent to him. When an arrow is given to him, 431
he is the owner as much as if he had made it himself, but if he uses that 571
arrow he must make a special gift of meat to the donor. When he uses
an arrow that is loaned to him, he merely shoots for the person who lent it
and who remains the owner of the arrow. !Kung society makes a great deal
of giving and lending arrows. Women and old men, as well as men in their
hunting prime, receive arrows as gifts and may give them or lend them to
a hunter, asking him to shoot for them. A hunter cannot refuse an arrow— [576]
as a person cannot refuse any gift—without offending the giver. He accepts
the arrow and with it an obligation, but he gives or lends arrows in return
and involves others in obligation to him. Hunters choose to use one or
another of their arrows, with the result that the responsibility of distributing
the meat, with its advantages and obligations, is shared by members of the
band as is the meat itself.

In the first distribution the whole animal is divided among a few 224
persons, who receive whole sections on the bone, unless the animal is so
large that the meat has to be cut off in strips to be carried. The first of these
persons are the hunters, each of whom gets a fore- or hindquarter or the
equivalent. The giver of the arrow (if the arrow was not made by the
owner himself) receives a generous portion. The owner of the arrow, who
may be one of the hunters, or anybody, keeps the rest.

In the second distribution, the several persons who got meat in the 224
first distribution cut up their shares and distribute them further. The 602
amounts depend on the number of persons involved, but should be as much
as the giver can manage. In the second distribution, close kinship is the
factor that sets the pattern of giving. A man's first obligation at this point [606]
is to his wife's parents. He must give to them the best he has in as generous [593]
portions as he can while still fulfilling other primary obligations, which are
to his own parents, his spouse, and offspring. He keeps a portion for himself
at this time and from it would give to his siblings, to his wife's siblings, if

They hang meat in the bushes to dry and can keep it for some time. It is not 251
uncommon for them to eat quite sparingly and save bits for a coming 261
journey or against a future day of hunger, as they eat sparingly of mangetti
nuts and *tsi* when they must make a supply they have carried from a great
distance last as long as possible.

The !Kung are well accustomed to restraining themselves in regard to 261
food. Thus when a visitor comes to a fire where people are preparing food 576
or eating, he should sit at a discreet distance, not to seem importunate, and
wait to be asked to share.

Although the hunters supply only about a fifth of the people's food 433
and the women four fifths, the women play a dependent role in !Kung 462
society. Nevertheless, the men do not ill-treat the women and require no 562
extreme form of obedience or subservience of them.

The primary factor in the dominance of the men is undoubtedly 562
strength. !Kung men are small and slender, but they are wiry and vigorous 147
and, with their strength, they carry and protect the very life of their people.

Another factor that brings men clearly forward is the character of 562
hunting and its reward. Women bring the daily food, but there is nothing 462
splendid about returning with vegetables and wood. Many of the vegetable 262
foods, furthermore, are rather tasteless and harsh and are not very satisfying. 224
The return of the hunters is vastly different. The intense craving for meat,
the anxiety that goes with the hunt, the deep excitement of the kill, finally
the eating and the satisfaction reach to the very core of the people, engaging
powerful emotions. Once a young man, /Qui, who was said to be the best
hunter in the region, had been charged by a magnificent cock ostrich on a
big open pan where there was no refuge. He knelt, facing the creature,
until it was within close range and shot an arrow straight into its heart.
Back in the werf, while the meat was being cut up and distributed by /Qui's [535]
wife's brothers, he slept exhausted on the mound of black and white plumes
and the women—some of the plumes in their hair—danced a dance of praise
around him. This is the role of !Kung hunters.

MATERIAL CULTURE

HOUSE TYPE AND SETTLEMENT PATTERN • The 342
building of the scherm—the Bushman reed-and-grass dwelling—is women's [462]
work, associated with vegetation and gathering. Each woman builds for her
own family. However, unless no better shade can be found or unless it is
raining, the women often do not bother to build these shelters. Especially
after the long days of walking, it is easier just to settle in the bushes.

In the Nyae Nyae region, wood and grass are everywhere, and a [137]
woman can gather her material and build her scherm in less than an hour. [461]
She breaks up flexible branches about six feet long, digs holes with her

other genital operations are not practiced by the !Kung. The *Choma* is not 881
compulsory; most boys take part but a few refuse. *Choma* owners do not [575]
form a corporate sodality. !Kung society has no such units except kinship
groups.

Another ceremony for boys, which is presumably ancient and traditionally 884
Bushman, must be performed before a boy can marry. This ceremony [224]
is performed twice for each boy, individually, on the occasion of his first
killing a large game animal, once for the first male, once for the first female.
The meat is cooked at a special fire, which women must avoid, and is eaten [262]
ceremonially by the men. The boy is scarified, by his father or another 884
male relative, on his right side for the first male animal, on his left side for the 304
first female. Little vertical cuts are made in his skin in lines on his arms,
chest, back, and forehead, and a paste of charred meat and fat is rubbed
into them. This is to ensure his seeing well, shooting well, and having a
heart that will say to him, "Why am I sitting here in the werf? Why am I
not out hunting?"

The passage from childhood to adulthood is marked for a !Kung girl 881
by a ceremony at her first menstruation. The girl is isolated in a special
scherm for the duration of the flow only. She must be covered by a kaross
because the sun must not shine upon her, and her feet must not touch the
ground. When she must go out to urinate or defecate, she is carried on the
back of the old woman (not her mother) who attends her. It is not the
menstrual blood but the girl herself who must be kept from touching the
ground. She would get thin if she disregarded this taboo. Men and boys [562]
must not look at the girl and she must not look at them lest the men become
highly visible to animals and unable to get near enough to them to shoot.

Every day that the girl is in the menstruation scherm, the women who 881
are present and one or two old men dance a special dance called the Eland 535
Dance and sing a special cycle of First Menstruation music. The Eland [533]
Dance is full of sex symbolism. The two old men should be free from even [831]
the most attenuated, symbolic extension of the incest taboo with respect [602]
to the girl, and it follows that they should have what is called the joking
relationship with her. The usual strict modesty of the women is set aside.
They take off their karosses (leaving their aprons on, however) and hang
strings of beads from their waists down over their bare buttocks. The old
men, with forked sticks tied to their heads to represent eland horns, imitate
the gait and carriage of elands, and dance among the women with subtly
erotic gestures. The other men and boys of the werf must stay at a distance.

When the girl stops menstruating she is washed, rubbed with tsi and 881
fat, and her face is painted with red lines. She then may go among the [302]
people again, but the first time she takes water from the water hole and [252]
the first time she cooks and eats veldkos, the water and veldkos must be

621
161 The remaining 122 individuals were living with the Bantu. The
162 diet of these latter people consisted of a combination of
[262] Bushmen wild foods and the products of the Bantu cattle. The
complete census of the 35 living units is shown in Table 3.

The 15 bands ranged in size from nine to 52 individuals. There were five small bands (of 9, 12, 12, 12, and 13 members), nine bands of intermediate size (of 17, 19, 19, 21, 22, 22, 24, 27, and 30), and one large band with 52 members. The average band had 20.7 members and the median band had 19 members. The presence of twin modes in band size (at 12 and 22 members respectively) is perhaps a function of the domestic cycle,[1] but its significance remains to be explained.

621 Each of the bands has a nucleus of individuals who have
a territorial claim to the land they occupy and who tend to
spend the greater part of the year in residence in their
territory. These core individuals are usually old people
whose descendents and their spouses make up the bulk of the
[602] band's membership. Each of the larger bands has among its
members one or more families who are collaterally or affinally
related to the core individuals. These collaterals and affines do not express as strong a territorial claim to the
band's land as do the core individuals and they tend to move
around more frequently than do the core individuals. As

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[1] I am indebted to Adam Kuper for this suggestion (personal communication).

[TEXT CONTINUED ON PAGE 48]

648
464 attached to an independent camp were living with the Bantu.
[233] [162] These working Bushmen, with their spouses and families,
numbered 44 people.

The Batawana headman, Isak Utuhile, was the only one of the Bantu residents to maintain a staff of retainers and their families. This sort of benevolent feudalism is a common practice throughout the Tswana tribal areas of Bechuanaland (Schapera 1953:28; Tagart 1933) but, with this one exception,
[162] is absent in the Dobe area. The headman supports four assistants (including a uniformed Bushman police constable) and their families, a total of 13 people.

Finally there was an Ad Hoc grouping of 26 !Kung who lived at the kraal of Enamoharadi, a Herero woman at Mahopa. These people lacked a territorial nucleus and therefore could
[224] not be considered as an independent camp. Several !Kung
[222] women helped with the domestic duties but the majority chose
[262] to use Mahopa as a base of operations for hunting and
gathering and to drink the milk of Enamoharadi's cattle when it was offered to them.

361 Except for the women who are married to Bantu, most of
648 the !Kung remain only temporarily in Bantu villages, for periods ranging from one month to two years. Also it was observed that most of the !Kung living with Bantu spent at least half the year hunting and gathering. Furthermore many

137 The major trees of the dune association are:

Ricinodendron rautanenii[1]

Burkea africana

Pterocarpus angolensis

Baikiaea plurijuga

Terminalia sericea

Other important constituents include:

Combretum mechowianum

Bauhinia macrantha

Ximenia caffra

Strychnos pungens

S. spinosa

Guibourtia coleosperma

[262] *Ricinodendron rautanenii* (the *mongongo* nut), the major food of the Dobe area Bushmen, is found only on the crests of [312] the fixed dunes. Because of the loose nature of the soils there is no standing water on the dunes at any season of the year. The only source of water on the dunes is the rain water which collects in the crotches of the mongongo trees from November to March. Although the volume of water stored is minute, the proximity of the supply to the nut groves makes this an important source of water for the Bushmen.

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[1] The common tree species were identified with the aid of Miller (1952).

136 Finally there are three peripheral species that are resident on the edges of the area.

vervet - common at Tsodilo, not observed in the Dobe area

baboon - common on the Okavango River, said to penetrate the desert, not observed

serval - reported to be present, not seen.

136 262 Of these 40 odd species only ten were observed to be regularly hunted and eaten by the Bushmen. These are ranked in order of dietary importance.

1. wart hog
2. kudu
3. duiker
4. steenbok
5. gemsbok
6. wildebeeste
7. spring hare
8. porcupine
9. ant bear
10. hare

136 **Birds:** Seventy-five species were recorded during the study. These were identified with the aid of Roberts (1957) and Smithers (1964). The most common resident species are listed here. Very common species are marked by an asterisk.

*ostrich
*yellow billed kite
red-billed francolin
*crowned guinea fowl
*crowned plover
secretary bird
martial eagle
Swainson's francolin
kori bustard
*blacksmith plover

double-banded sandgrouse
Meyer's parrot
lilac-breasted roller
yellow-billed hornbill
*fork-tailed drongo
*pied babbler
Marico flycatcher
*long-tailed shrike
cape turtle dove
*grey loerie
*grey hornbill
cardinal woodpecker
penduline tit
yellow-bellied bush warbler
Crimson-breasted shrike
white-browed sparrow weaver

The common summer migrants recorded were:

hammerkop
red-billed teal
European swallow
white-bellied stork
white-faced duck

[262] Bird meat and eggs are not an important item of diet among the Dobe Bushmen. Only eight species were observed to be eaten:

red-billed francolin
crowned guinea fowl
red-crested korhaan
cape turtle dove
Swainson's francolin
kori bustard
double-banded sandgrouse
red-billed teal

Curiously, ostrich are not hunted for meat. They are tracked, [415] however, in order to find the nests. The eggshells are used as canteens for water.

Reptiles and Amphibians: Nine different species of snakes were seen. Only four could be identified taxonomically.

136 Two species of frog:

1. *Pyxiecephalus adspersus*
2. *Rana anchietae*

[262] Of these twenty-four species, five were recorded as eaten:

1. rock python
2. large leopard tortoise
3. small leopard tortoise
4. land leguaan
5. the bullfrog *Pyxiecephalus*

[126] *Invertebrates*: Only a small percentage of the countless insects and other invertebrates present at Dobe were collected. One box of specimens was lost in the mail. Other identifications are pending. Below are listed thirteen species of invertebrates and a further sixty-nine species of insects.

Class Arachnida	Scorpions 2 spp.
	Spiders 3 spp.
	Ticks 2 spp.
Class Myriapoda	Centipede 1 sp.
	Millipede 1 sp.
Class Hirudinea	Leech 1 sp.
Class Unionidae	Freshwater clam 1 sp.
Class Helicidae	Land snails 2 spp.
Class Insecta	

Order Dictyoptera

Cockroach 1 sp.

136 Order Coleoptera

Blister beetles 2 spp.

Click beetles 6 spp.

Dung beetle 3 spp.

Poisonous beetles 2 spp.

Other beetles 2 spp.

136 • 262 Insects do not play an important role in the diet. One species of antlion (determination pending) had an annual outbreak around the end of November. Tens of thousands pupate within a 36 hour period and the Bushmen eat them by the hundreds. In 1963, the outbreak occurred on November, 24, in 1964, on December 3.

Three different species of click beetle were eaten in March, 1964. These were considered a delicacy rather than a staple. The Bushmen said that certain grasshoppers and caterpillars were edible but they were not observed to eat them.

262 237 Honey is considered by all authors to be a major Bushman food (Bodenheimer 1951). It is curious therefore that it was rarely observed to be collected or eaten.

136 278 By far the most important insects for subsistence are the two[1] species of beetle used by the Bushmen for poisoning

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[1] Possibly as many as eight species of poison grub are used by the !Kung Bushmen! Koch (1958) collected five new species that the !Kung said were used for poisoning arrows. (See Shaw et al., 1963).

132 805 dates of onset and termination of the main rains. For
instance, in 1963-64, the major rains were concentrated in
an eight-day period in late November and early December and
were very light during the next three months. In the following rainy season, 1964-65, the major rains came later.
They were only just beginning when we left the study area in
[137] January, 1965. During the period of the main rains, the
[312] major summer foods (fruits, berries, melons) make their
[262] appearance, and there is standing water in the molapos far
from the permanent wells.

3. *≠obe* (autumn) -- The autumn season is brief. In
[312] 1964, it fell in April after the rains had ceased. The
weather remains warm and the high evaporation rates rapidly
dry out the pools of summer water.

4. *!gum* (winter) -- This cold dry season extends from May through August. It is heralded by a sharp drop in nightly temperatures and during 1964 the Dobe area experienced six weeks of freezing or near-freezing nights in June and July. The days are clear and, by tropical standards, cool, often characterized by strong dessicating winds from the south and west with gusts estimated at up to 40 knots.
[312] Water is available only at the permanent wells and plant foods
[262] become increasingly scarce as the season progresses.

5. *!ga* (early spring) -- This season begins in late

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[312]
[262]
August with a rapid increase in daily temperatures and ends in October or November with the onset of the first rains. It is a hot dry period during which water and food supply reach their annual low levels. However, the increasing day-length appears to prepare the flora and fauna for the season of reproduction which is triggered by the first rains.

Rainfall

Until 1961 there was no weather station in the central !Kung interior. In that year a rain gauge and other recording instruments were established at Tsumkhwe, South West Africa, a government station 35 miles west of Dobe. The data from this station are not available to the author. The only other sources of rainfall data are the author's fifteen-month series of measurements made at Dobe (1963-64) and the long-term records from stations on the periphery of the Kalahari. The peripheral stations and their rainfall are listed below:

South West Africa

Epukiro - (200 miles southwest of Dobe) - 13.2 inches per annum.

Grootfontein - (200 miles west of Dobe and 1,000 feet higher in elevation) - 17.3 inches per annum.

Bechuanaland Protectorate

Ghanzi - (175 miles south of Dobe) - 18.5 inches per annum.

132 Maun - (175 miles east of Dobe) - 18.6 inches per annum.

The rainfall recorded at Dobe for 1964 was only 6.9 inches. This is a much lower figure than that from any of the peripheral stations but it is within the range of annual rainfall estimated by the Marshalls. During their several expeditions to the central interior from 1951-59, they estimated that the annual rainfall varied between 6 and 10 inches (L. Marshall, 1965).

The period 1963-65 was one of severe drought in Bechuanaland. There were many instances of crop failures and drying up of waterholes throughout the Protectorate. Although it is not possible to judge accurately without comparative data for other years, it is probable that the Dobe area !Kung Bushmen experienced an unusually difficult subsistence situation during the period of the author's residence. [262] Because the Bushmen subsist on hardy wild foods which are drought-resistant, they did not suffer the hardships experienced by their Bantu neighbors whose crops failed three years in succession. However, it is possible that the Bushmen had to work harder, walk farther and dig deeper in 1963-64, than they would have had the rainfall been more abundant. This possibility should be kept in mind when evaluating their annual subsistence cycle (Chapter VIII).

The monthly record of rainfall at Dobe is shown in Figure 2, p. 94.

V. SUBSISTENCE ECOLOGY: AN OVERVIEW OF PLANT AND ANIMAL RESOURCES

121 The concept of a hunting and gathering way of life has
assumed a misleading connotation in the ethnographic literature.
The term has come to imply a random precarious
existence searching for food, an eking out of subsistence
[433] of odds and ends. Since the present study is the first detailed
analysis of the food habits of non-agricultural people,
it should be stated at once that the Bushman subsistence is
based on a systematic strategy of exploiting abundant food
222 resources. Very little of their food gathering is left to
chance. Their knowledge of the local environment, of the
habits of game and the growth phases of food plants is
virtually exhaustive. In other words, the Bushmen know
where the food is at each season of the year and they arrange
their schedule of activities to take maximum advantage of
these resources. They do not allow themselves to get into
difficult situations, and even during the season of scarcity
they have available several alternative strategies of getting
food and water.

262 The security of their life is in part due to the fact
137 that the basis of their subsistence is plant foods which are
136 abundant, local and predictable. Meat is of secondary importance
in the Bushman diet. Game animals, by contrast to

262 137 136 433 plants, are scarce and unpredictable and people never depend on meat for their basic subsistence. Therefore the well-being of the Bushmen as a population can be viewed as the product of two factors: the abundance of food resources in their environment, and the intelligence and sophistication which informs their exploitation of these resources.

512 433 Although the getting of food is the major activity of Bushman life and is a major focus of Bushman thought, the greater part of the waking life of the Bushmen is given over to social, religious and trading activities that are largely independent of the food quest.

Their emphasis on non-subsistence activities becomes clear when daily records are kept of the activities of the
[126] members of a camp. For example, a diary of activities was kept for the Dobe camp during July, 1964. This record was made during mid-winter, a season of comparative scarcity. It
[462] was found that the 23 adults of this camp spent less than half of their days in subsistence activities, an average of 23% of the time for the women and 40% of the time for the
[574] men. The majority of their waking hours were spent visiting
[521] other camps, entertaining visitors, resting, talking, hut building, and making tools, clothing, and ornaments.

Plant Resources

137 136 There are well over 200 species of plants and 220 species

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136 of animals named and known by the Dobe area Bushmen. Of [126] these 420 species, 350 species were collected and identified 433 by the author. Two-thirds of the plant species and half of 824 the animal species are utilized by the Bushmen. Of these, 825 they classify 85 species of plants and 54 species of animals as edible. It is therefore evident that the Bushmen have a remarkably broad subsistence base. On closer examination, however, one finds that the Bushmen are highly selective in their food habits. In fact, only nine species of plants constituted about three-quarters of the total vegetable diet; and one species alone, the mongongo nut, accounted for at least half of the total. Furthermore, of the 54 animal species eaten, only 17 species were consistently hunted.

824 A plant species may be regarded by the Bushmen as a 262 major food for one or more of several reasons. Certain foods are prized because of their abundance or because of the long season during which they are available. Other foods are prized because of the ease with which they are collected. For this reason fruits are generally more popular than roots since the latter have to be dug out of the ground. Then, there are foods which are especially good tasting and/or believed to be highly nutritious. The various plant foods are evaluated pragmatically and rationally and few species 825 are restricted by magico-religious taboos. This is in sharp
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262 contrast to the evaluation of animal foods all of which fall under taboos of varying strictness.

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262 By using these criteria of abundance, duration of eating season, ease of exploitation, tastiness and nutritional value, the Bushmen have arranged the universe of edible plants hierarchically in terms of the overall desirability of each species as food.

This scheme divides the 85 edible species into six classes:

I.	Primary	1 species
II.	Major	8 spp.
III.	Minor	14 spp.
IV.	Supplementary	32 spp.
V.	Rare	13 spp.
VI.	Problematic	17 spp.
	TOTAL	85 species

I. Primary food - All Bushmen of the Dobe area agree that their primary food is the nut of the mongongo (mangetti) tree: Ricinodendron rautanenii. This food rates high on all the criteria of desirability described above. It is superabundant (millions of nuts rot on the ground each year for want of eating); it is eaten in all months of the year; it is easy to collect, has a delicious taste, and is highly

262
824 nutritious.[1]

It should be added that meat is considered by all the Bushmen as a primary food. Informants agreed that an ideal diet should consist primarily of meat and mongongo nuts. In actual practice this ideal is not always attained.

II. Major foods - After Ricinodendron there are eight species that Bushmen consider as major foods but none of these rate high on all five criteria of desirability. There are three species which are superabundant in quantity and delicious to the taste, but are available for only a short period of the year. They flourish during the rains but by winter, three months later, they have become shrivelled and dried out. The three summer species are: Grewia flava, the morethlwa berry; Ximenia caffra, the sour plum; and Citrullus [312] lanatus, the famous Tsama melon. The latter species also serves as an alternative source of water but this is not important in terms of food strategy because the season of Tsama melons coincides with the season of abundant standing water. Among the /gwi Bushmen of the Central Kalahari Game Reserve, the Tsama melon is a more important source of water because it

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[146] [1] The nut of Ricinodendron has been chemically analyzed (quoted in Watt and Breyer-Brandwijk 1962:428). The kernel of the nut was found to yield 60%, by weight, of a quick-drying fixed oil, rich in proteins. The fruit of the nut, which is also eaten by the !Kung Bushmen, yielded, among other constituents, 31% saccharose and 7.9% protein.

persists into the winter dry season (Silberbauer 1965).

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262 The fruit of the baobab tree, Adansonia digitata, is another of the major foods. It is most important during winter but tends to rot if left on the ground and therefore cannot be eaten in all months of the year.

The vegetable ivory palm, Hyphaene ventricosa, has two edible parts. The fruit of the mature form is abundant but yields very little of food value. The dwarf form of the palm lacks fruit but the heart of the stalk is an important item of diet. This latter food has two distinct disadvantages. It is difficult to collect because the stiff palm fronds must [164] be laboriously hacked away to reach the heart. Also those who eat its fibrous pulp complain of stomach cramps and diarrhea. Therefore it is eaten only when more desirable foods are not available.

The nut of the morula tree, Sclerocarya caffra, is a delectable food, even tastier than the mongongo nut. But it rates low on the important criterion of ease of eating. The nut meats are small and crumble easily; so they must be carefully picked out of the shell with a thorn. This operation requires patience and it was observed that the women ate many more morula nuts than did the men. The morula tree is also important in subsistence because one of the species of beetle used in arrow poison feeds on its leaves.

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Bauhinia esculenta, the "Tsi bean", ranks with Ricinodendron as the primary food of the Nyae Nyae Pan area (L. Marshall 1965), where both the beans and roots are eaten. In the Dobe area, however, this species of Bauhinia has a spotty distribution. In order to reach the large groves, the Dobe area Bushmen must travel long distances to the borders of the Nyae Nyae area. Because of this factor, the "Tsi bean" is not popular in the Dobe area, where the alternative primary food, Ricinodendron, is locally abundant.

[312] The last of these eight major species is, in a sense, the most important, not because of its abundance or its food value (it is neither plentiful nor nutritious) but because of its water storage properties. This is the plant, Fockea monroi, the root of which may contain up to a pint of water. At the end of the dry season when food has become exhausted within a walking radius of the permanent waterholes, people often move into the waterless bush where food is still plentiful. Here they are able to live for one or two weeks by digging out and drinking the juice of the Fockea roots.

It may be useful to think of Ricinodendron and Fockea as the "alpha" and "omega" of the Bushman food plants. The first, Ricinodendron, is the food that carries the Bushmen through the months and years, while the second, Fockea, is the critical plant that enables the Bushmen to eat well through the short but severe dry hot season.

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III. *Minor foods* - Next in importance to these nine species is a series of 14 species which rate high on one or two of the criteria of desirability. These include seven species of edible roots and bulbs (including *Coccinia* spp., *Eulophia* spp., *Lapeirousia* spp., *Vigna* spp., and *Walleria* spp.) which taken individually are not important but as a class they become a major item of diet during the winter dry season. This is the time of year when the more abundant summer fruits and melons are not available. The winter foods include as well the edible gum from the trees *Terminalia sericea* and *Acacia mellifera*.

Five of these minor foods occur only during the summer. These include the berries of three species of the genus *Grewia*, and the edible leaves of the species *Dipcadi glaucum* and *Talinum crispatulatum*.

All of the species of Class III are seasonally limited. When available, each species was eaten several times a week. On this basis they can be distinguished from the major foods of Classes I and II which were eaten daily.

IV. *Supplementary foods* - There were 32 species of plants which were supplementary to foods of Classes I, II, and III, or which were eaten when the more desirable foods had become locally exhausted. The list comprises ten species

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262 of fruits and berries (including five species of Grewia), two species of melon, one species of leafy green, ten species of edible gum, and nine species of roots. The roots taken as a class were especially important during the winter season when the fruits and berries were not available. In general, the foods of Class IV were both less abundant and less tasty than the corresponding foods of Class III.

V. Rare foods - This class of foods includes 13 species which were observed to be eaten only on a few occasions. Nevertheless, several of these were classified as important foods by the Bushmen. For instance, the fruit of Guibourtia coleosperma was considered excellent eating, but this tree bears fruit only once in several years. Had the study been carried out during a year when Guibourtia was in fruit, it might have ranked higher. Maguire (n.d.), who did botanical research near Dobe in 1952-53, has listed Guibourtia as a major food.

Most of the foods in Class V were locally uncommon. These include two species of fruit, eight species of root, and the curious parasitic plant Hydnora sp. which bears an underground fruit (Story 1958:19-20).

VI. Problematic foods - Finally there are seventeen species which the Bushmen said were edible but which were not observed to be eaten during the study period. Some of these

824 262 such as Boscia albitrunca and Bauhinia macrantha did not come into fruit in 1963-64 because of the drought. The majority were not eaten because of their unattractive taste and because more desirable foods were available.

These 85 species are listed alphabetically by class in Table 5, pp. 108-110.

The way in which the Bushmen arrange these 85 plants in order of their importance as foods suggests a productive analogy to the way they utilize space in subsistence activities.

262 222 The Bushmen typically occupy a camp for a period of weeks and eat their way out of it. For instance, at a camp in the mongongo forest, the members of the camp will exhaust the nuts within a one-mile radius the first week of occupation, within a two-mile radius the second week, and within a three-mile radius the third week. The longer a group lives at a camp, the farther they must travel each day to get food. This is a feature of daily subsistence that occurs at both winter and summer camps. For instance, at the Dobe winter camp, in June the gatherers were making daily round trips of six to nine miles to reach the mongongo nuts. By August the daily round trips had increased to ~~twelve~~18 miles.

This progressive increase in walking distance occurs because the Bushmen are highly selective in their food habits. They do not eat out all the food in a given area. They start

[TEXT CONTINUED ON PAGE 111]

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TABLE 5

THE 85 SPECIES OF BUSHMAN FOODS ARRANGED, BY CLASSES, IN ORDER OF DECREASING DESIRABILITY

Class I.	Primary Food	
1.	Ricinodendron rautanenii	(fruit and nut)
Class II.	Major Foods	
2.	Adansonia digitata	(fruit)
3.	Bauhinia esculenta	(beans and root)
4.	Citrullus lanatus	(melon)
5.	Fockea monroi	(root)
6.	Grewia flava	(berry)
7.	Hyphaene ventricosa	(fruit and stalk)
8.	Sclerocarya caffra	(fruit and nut)
9.	Ximenia caffra	(fruit)
Class III.	Minor Foods	
10.	Acacia mellifera	(gum)
11.	Coccinia rehmannii	(root)
12.	Coccinia sp. (or Trochomeria sp.)	(root)
13.	Diospyros chamaethamnus	(fruit)
14.	Dipcadi glaucum	(leaves)
15.	Eulophia sp.	(root)
16.	Eulophia sp.	(root)
17.	Grewia bicolor	(berry)
18.	Grewia flavescens	(berry)
19.	Lapeirousia coerulea	(bulb)
20.	Talinum crispatulatum	(leaves)
21.	Terminalia sericea	(gum)
22.	Vigna dinteri	(root)
23.	Walleria muricata	(bulb)
Class IV.	Supplementary Foods	
24.	Acacia erubescens (var. A. dulcis)	(gum)
25.	A. fleckii	(gum)
26.	A. gillettiae (var. A. uncinata)	(gum)
27.	A. giraffae	(gum)
28.	A. heteracantha	(gum)
29.	Annona stenophylla	(fruit)
30.	Burkea africana	(gum)
31.	Ceropegia sp. nr. C. leucotaenia	(bulb)
32.	C. sp. nr. C. mozambicensis	(bulb)
33.	Citrullus naudinianus	(melon)
34.	Coccinia sessilifolia	(melon and root)
35.	C. sp.	(root)

824 36.	Combretum imberbe	(gum)
262 37.	C. mechowianum	(gum)
38.	Cyperus fulgens	(bulb)
39.	C. sp.	(bulb)
40.	Dichrostachys glomerata	(gum)
41.	Dipcadi longifolia	(bulb)
42.	D. sp.	(bulb)
43.	Grewia avellana	(berry)
44.	G. falcistipulata	(berry)
45.	G. retinervis	(berry)
46.	G. subspathulata	(berry)
47.	G. sp.	(berry)
48.	Mukia maderaspatana	(leaves)
49.	Raphionacme sp.	(root)
50.	R. sp.	(root)
51.	Strychnos spinosa	(fruit)
52.	Terminalia prunioides	(gum)
53.	Vangueria longicalyx	(fruit)
54.	V. infausta	(fruit)
55.	Ximenia americana	(fruit)

Class V. Rare Foods

56.	Corallocarpus welwitschii	(root)
57.	Cucumis sp.	(root)
58,	Guibourtia coleosperma	(berry)
59.	Hydnora sp.	(root)
60.	Ipomoea verbascoidea	(root)
61.	Lapeirousia sp.	(bulb)
62.	Nymphaea sp.	(root)
63.	Ochna pulchra	(berry)
64.	Raphionacme burkei	(root)
65.	R. sp.	(root)
66.	Salacia lubberti	(fruit)
67.	Strychnos pungens	(fruit)
68.	Vigna unguiciculata	(root)

Class VI. Problematic Foods

69.	Acacia karoo	(gum)
70.	Amaranthus sp.	(leaves)
71.	Aristida gracilior	(seeds)
72.	Bauhinia macrantha	(beans)
73.	Boscia albitrunca	(fruit)
74.	Cephalocroton pueschellii	(fruit)
75.	Clerodendrum uncinatum	(fruit)
76.	Combretum psidioides	(gum)
77.	C. zeyheri	(gum)
78.	Dichapetalum cymosum	(fruit)
79.	Dichrostachys cinerea	(gum)
80.	Dipcadi longifolium	(bulb)
81.		

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81.	Grewia sp.	(berry)
82.	Ziziphus mucronata	(berry)
83.	not determined - !Kung name -"todi"	(root)
84.	not determined - !Kung name -"!gwi"	(root)
85.	not determined - !Kung name -"//aižeri"	(root)

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by eating out the most desirable species and when these are exhausted they then turn to the less desirable species. Because the food resources are both varied and abundant, in any situation where the desirable foods are scarce the Bushmen have two basic alternatives in food strategy:

- first they may walk farther in order to continue to eat the more desirable species,
- or, they may remain closer to camp and exploit the less desirable food species.

For instance, at the Dobe winter camp mentioned above, by August the younger members were making the long round trip to the mongongo nuts, but the older members were exploiting foods of Classes III and IV which they had hitherto ignored and which were still abundant close to the Dobe waterhole. There was a general but not invariable tendency at each camp for the Class I and II foods to be locally exhausted first, then the Class III foods were exhausted and only then were the Class IV foods systematically gathered. One never observed the complete exhaustion of foods around a camp, because the Bushmen always moved camp long before the foods of Class IV had reached scarce levels.

These alternative strategies will be documented in later chapters. For the present one should bear in mind that !Kung subsistence always has two dimensions. There is a spatial

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262 dimension in which the gatherers move farther and farther in order to eat the desirable foods, and a hierarchical dimension in which people remain in one area and eat their way through classes of species of decreasing desirability.

136 Animal Resources

The 223 known species of animals in the Dobe area are divided taxonomically as follows:

mammals	42 spp.
birds	75 spp.
reptiles and amphibians	24 spp.
invertebrates	82 spp.
TOTAL	223 spp.

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825 Mammals - The mammals represent the highest percentage of animal biomass in the Dobe area and it is not surprising that the meat of mammals accounts for over 90% of the animal diet of the Bushmen. In all, 29 of the 42 mammal species are known to be eaten by the Bushmen and only seven mammal species are universally tabooed as food.

Personal, age specific, and sex specific taboos play an important role in the eating of mammals. No individual Bushman will eat all of the 29 eaten species and no two individuals have the same set of tabooed species. Each person has his own prescription of what species he may and may not eat. The mammals can be divided into seven degrees of taboos.

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First, there are nine species which are eaten by all people regardless of sex and age, although there are restrictions on the anatomical parts. For instance, women may not eat kudu intestines, but may eat the meat of the extremities. This class of animals includes:

giraffe
eland
roan antelope
gemsbok
wildebeeste
hartebeeste
kudu
duiker
hare

A second group of species may be eaten by all except premenstrual adolescent girls. The mammals include:

steenbok
springhare

Third are the species that are eaten by most people. Individuals may not eat one or another of these species because of personal dietary restrictions set by the ritual curers:

wart hog
buffalo
antbear
porcupine
bat-eared fox
pangolin

Fourth are species that are eaten by a few people of both sexes and are avoided by most people:

genet
honey badger
aardwolf
slender mongoose
banded mongoose
cheetah

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262 Fifth are species that are eaten only by old women for whom the food taboos of adult life have been lifted:

lion
caracul
leopard
zebra
jackal

Sixth is a species that is eaten only by ritual curers for magical purposes:

cape polecat (zorilla)

Finally there are seven species that are universally tabooed. These include the carnivorous species that are said to eat people:

spotted hyena
brown hyena
wild dog
wild cat

as well as three species of primates that the Bushmen say are close relatives of man:

vervet monkey
baboon
galago

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224 The small mammals, such as rodents, bats, and squirrels, are not hunted or eaten. The Bushmen said that no taboos were associated with these species. However, these species were not worth killing because each carried only a few ounces of meat. Occasionally squirrels that are found dead or accidentally caught in snares are fed to the dogs.

The important point in terms of food resources is that

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262 all hunters may hunt every species regardless of whether a
224 given species is personally tabooed.

In actual practice only ten species of mammal were consistently hunted by the Dobe area Bushmen. These are: kudu, wildebeeste, gemsbok, steenbok, duiker, wart hog, antbear, porcupine, springhare, and common hare.

In addition to the above a further ten species were observed to be occasionally killed and eaten. These include:

pangolin
genet
aardwolf
slender mongoose
caracul
bat-eared fox
honey badger
cheetah
jackal
cape polecat

825 The Bushmen generally consider the meat of herbivorous
262 mammals as the most desirable food. The meat of insectivorous mammals such as antbear, pangolin and bat-eared fox is less highly prized. The meat of carnivores is generally undesirable but nevertheless eaten by at least some people, when it is available. At the bottom of the list of preferences is the meat of hyena and wild dog. The Bushman explanation is that since these species eat people, to eat their meat is indirectly an act of cannibalism.

[224] There is evidence of regional and historical variation in the species systematically hunted by the !Kung of the

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224 central interior. John Marshall found that most of the meat brought in by the Nyae Nyae area hunters was from the large ungulates such as wildebeeste, eland and gemsbok. Small mammals such as springhare were rarely hunted (1957, and personal communication). By contrast, the most frequent kills in the Dobe area were the smaller animals: springhare, steenbok and duiker, whereas the killing of a large antelope was a rare and great event. Giraffe and eland were not hunted by the men of the Dobe area.

[173] The older Bushmen state that in the early days there were more game animals and more Bushmen in the central interior and that their forefathers used to hunt in large groups, killing giraffe, buffalo and even elephant.

At present, the most important single source of meat in the Bushman diet is wart hog. It was not the most frequent mammal killed. Springhare, steenbok and duiker were all killed more frequently than wart hog. But the southern African wart hog weighs about 170 lbs., whereas the springhare weighs only 7-1/2 lbs, the steenbok, 25 lbs., and the duiker 43 lbs. At the Dobe camp wart hog were killed at the rate of three per month throughout the study period. The edible portion of each carcass is about 50%. Therefore wart hog provided a regular supply of c. 255 lbs. of meat per month to the members of the Dobe camp.

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224 Steenbok and duiker were the next in importance because of the frequency with which they were killed, especially during the winter when they were systematically trapped and during late spring when the young could be easily run down on foot.

Springhare were the most frequent animal killed. The 7-1/2 lb. carcass has a high percentage of edible meat (60%) and the killing rate in some seasons was as high as 10 per week.

It is difficult to evaluate the large antelopes, kudu, wildebeeste, and gemsbok in terms of their dietary importance because they were rarely killed. A hunter who had killed five large antelopes in a year was considered to be above average. Most of the hunters killed one or two per year, Even a single kill, however, provides a massive return in meat. The average dead weights[1] of these species are:

kudu (M)	600 lbs.
kudu (F)	350 lbs.
gemsbok (M)	444 lbs.
gemsbok (F)	514 lbs.
wildebeeste (M)	550 lbs.
wildebeeste (F)	450 lbs.

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[1] All the mammal weights quoted in this study were provided by Reay Smithers (personal communications).

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224 By killing one male kudu (600 lbs.) with a weight 24 times greater than that of a steenbok (25 lbs.) a hunter would provide his camp with a quantity of meat roughly equivalent to that provided by 20 steenbok (assuming that the kudu has a somewhat lower ratio of edible to inedible parts than does a steenbok).

[628] On the face of it, hunting large antelope would appear to have overwhelming advantages in terms of meat. However, when news of such a kill reaches neighboring camps, dozens of friends and relatives descend upon the killer's camp to assist him in disposing of the meat. Thus at the end of several jovial days the superabundance of meat disappears and the fortunate hunter is out looking for meat again. The killing of a large antelope therefore has more prestige value than nutritional value to the family of the man who killed it.

This pattern of sharing large kills beyond the boundaries of a camp is ecologically adaptive because meat spoils quickly, especially during the rainy season and it is often necessary to eat meat that is in danger of becoming rotten. 825 262 224 251 The Bushmen know how to make biltong (dried strips of meat) but rarely do this. This infrequency of making biltong is probably both a cause and an effect of sharing meat widely. The only part of a large antelope kill that is consistently set aside for future consumption is the hide. This part of

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262 224 [251] the animal evidently has much better storage properties than the flesh.

[628] In general, the larger the animal killed, the more widely its meat is shared. The meat of springhare, hare, steenbok, and duiker is usually consumed by the hunter's immediate family. The meat of wart hog, antbear and porcupine is shared out among the members of a hunter's camp. The meat of kudu, wildebeeste and gemsbok is shared out among the hunter's camp and among members of neighboring camps.

825 262 223 Birds - The eating of birds again illustrates the selective food tastes of the Bushmen. Of the 75 species of birds recorded only eight species were said to be eaten and of these only four species were observed to be systematically hunted. The four important game birds were:

crowned quinea fowl
Swainson's francolin
red-billed francolin
red-crested korhaan

The other birds eaten were:

Kori bustard
Cape turtledove
double-banded sandgrouse
red-billed teal

Snares were regularly set in order to capture guinea fowl, francolin and korhaan. Occasionally other birds triggered the snares. Usually these other species were fed to the dogs. Occasionally they were simply discarded.

222 262 825 Only the eggs of the above eight species appeared to be

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262 gathered and eaten. With one exception all other birds eggs
[415] were ignored. The exception was the ostrich eggs which were
[301] highly prized as water containers and as material for making
ostrich egg shell beads.

Reptiles and Amphibians

Only four species of reptile - two tortoises, one leguaan, and the rock python - were regarded by the Bushmen as edible. One species of frog, Pixiecephalus sp. was regarded as edible. Of these five species, the large leopard tortoise (Geochelone pardalis) is the most important food. These tortoises weigh 5-8 pounds. s. They are sluggish and easily collected. For this reason, the tortoises were the only species of vertebrate that were collected by the women. All other vertebrates were the exclusive concern of the men.

The rock python, a large non-poisonous snake, was regularly collected by the men. This provided c. 25 lbs. of meat per specimen. The pythons collected varied in length from 8-15 feet. The other three species were rarely observed to be eaten.

Invertebrates

Insects have traditionally been considered by ethnographers to be a major Bushman food (Bodenheimer 1951:137-195). However, among the Bushmen of the Dobe area insects played a minor role in the diet. One species of antlion and three

222 262 [825] species of beetles were observed to be eaten. Termites and locusts were not eaten. Honey is highly regarded as food by the Bushmen,and the hunters often investigated bees nests but honey was never observed to be eaten at the Dobe camp and only rarely at other camps.

262 824 825 In summary the plant and animal resources of the Dobe area include 85 plant and 54 animal species which are eaten. Closer examination reveals that only a small number of these edible species play a major role in the diet. Only 26 of the 139 edible species may be considered as major Bushman foods: 9 species of plants and 17 species of animals.

222 Also, on occasion, the men
262 scavenge meat from carnivore kills. If the day's hunt has
224 been unsuccessful a man may hack a piece of dried hide from a kill that may be several weeks old. Or, if several men are hunting together they may drive the lesser scavengers such as vultures and hyenas off a fresh kill. Scavenging is not a regular practice. It occurs only if the opportunity presents itself and if there is no other meat forthcoming.

824 222 Citrullus lanatus - the well-known "tsamma" melon was one of the superabundant foods. It was intensively exploited throughout the mid-summer until it was exhausted within a radius of five miles of the !Gausa Pan. This is a remarkably successful plant around the areas of human habitation. It is an annual (Story 1964:20) and will sprout from seed wherever the pips have been discarded. It is interesting that the Bushmen do not consider cultivating this melon, a common practice among the neighboring Bantu.

Grewia flava berries were superabundant in the vicinity of !Gausa and Characharaha. The amount a woman could bring home was limited only by the speed at which she could pick them from the five-foot tall bushes. In addition, six other species of Grewia were locally available: (G. bicolor, G. flavescens, G. avellana, G. falcistipulata, G. retinervis, and G. subspathulata). It is interesting that, because G. flava has the tastiest berry of all the Grewias, the other six species were largely ignored until the G. flava had been exhausted within a six mile radius of !Gausa.

824 262 When the new crop of mongongo nuts falls, the gatherers can ignore the previous year's crop. The mongongo nut has two edible portions: an outer fruit and an inner kernel. Figure 3 on page 161 shows a mongongo nut in cross section magnified four times to show detail. The outer layer of skin

[TEXT CONTINUED ON PAGE 162]

824 is not eaten. Next is a casing of granular-textured fruit
262 which is eaten. The fruit encloses the nut itself. This
consists of a thick outer shell which must be cracked open
with the nut-cracking stones. Within the thick shell is a
softer inner shell which encloses the nut kernel which is the
staple of the Bushman diet. This inner kernel is "packaged"
within four protective layers and this explains its remarkable
storage properties.

824 In the late summer and autumn months the Bushmen eat
252 large quantities of both the fruit and the nut. First the
women boil potfuls of whole fruit in order to separate the
outer flesh from the hard shell. The flesh of the fruit
produces a delicious fruit puree that tastes like stewed
prunes. After the fruit is eaten, the nuts themselves are
set aside for later cracking and eating.

184 The summer hunting situation appears to vary from camp
221 to camp. At the !Gausa camp very little hunting was done.
224 [177] The resident men assisted the Bantu in cattle herding and they
[648] received calabashes of sour milk as payment. At Characharaha
[464] the men hunted more, killing gemsbok, python and porcupine.
At one summer camp, Mokoro, where there were no Bantu resident,
two young men killed four large buck in the space of one
month (two kudu and two gemsbok). This Mokoro camp was an
[177] unusually successful one. The availability of cows' milk and
meat no doubt lessens the men's incentive for hunting

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because it entailed two consecutive days of hardhiking on short water rations. The object of such a trip was to get to the nuts and back again as quickly as possible, before the physiological deficit of water was allowed to reduce efficiency.

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The general object of the winter nutting trips was to remain at the nut forests just long enough to eat a really substantial quantity of nuts (about 400 nuts per adult). This marathon meal starts the moment that the Bushmen arrive at the nut camps and continues throughout their stay. It is interrupted for short periods when the Bushmen go out to collect nuts in the vicinity of their temporary camp. [539] There is a Bushman saying that aptly applies to this situation: "It is better to carry food home in your stomach than on your back."

[224] Hunting rarely occurs at these overnight camps. The efforts of men and women alike are directed to eating as many nuts as possible in a short time.

[312] The most important variation in the late winter and spring subsistence tactics centers on the use of Fockea monroi as a source of water. This will be discussed below.

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6. Early Spring

August is the last month of winter. The last of the freezing nights occurs at the first of the month and these are followed by warmer nights in the 40's and 50's and daily

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433 Unfortunately spring is the most difficult season for the Herero as well as for the Bushmen. The good grazing for livestock is miles distant from the waterholes. Consequently the cattle are in poor condition and their yield of milk is low.

251 It would be useful for the Bushmen to amass a surplus of food in anticipation of this scarce season. However, none of the 15 independent camps observed ever kept more than a few days supply of vegetable foods on hand. Surplus accumulation was not a feature of Bushmen food strategy except for one instructive case.

There was a noticeable attempt to create a small surplus
251 in the form of dried meat and hides. Each family maintained
285 a storage basket in the crotch of a young tree. By weaving a framework of branches and palm fronds and lining this with grass, they built up a rough basket for storing weapons, water containers and small amounts of food. The storage basket was built five feet above the ground which kept its contents safe from the reach of dogs and children. If a day's hunting had been unsuccessful, the members of a camp could invariably produce an emergency ration of dried meat or, more often, dried hide for the evening meal. People saved scraps of dried hide of kudu, gemsbok and wildebeeste from kills made weeks or
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252 months previously. These scraps were softened by boiling or
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251 were roasted in the coals of the fire and then pounded to
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262 the consistency of coarse meal in the wooden mortar. This roasted hide had the taste and texture of crisp crackling and was delicious when pounded and mixed with the flesh of roots of the genera Coccinia, Walleria and Eulophia. These stores of dried hide and meat did not serve as a staple surplus so much as an emergency delicacy to brighten the diet when a day's hunting had been unsuccessful.

221 The major food strategy during the hot dry spring was
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312 the 7-14 day trip to the waterless country where mongongo nuts
361 were still plentiful. At these camps the only source of
824 water was the juice from the roots of Fockea monroi. Fockea has an uneven distribution in the Dobe area. The Bushmen must camp in a nut forest that is in close proximity to patches of Fockea. The maximum period that a group was observed to live on Fockea roots was two weeks. The limitation is set by the density of Fockea plants in an area, and the amount of fluid that each plant holds. Life at the Fockea patches is difficult because people have to work hard to obtain water as well as food. Each Fockea root storage organ contains 8-16 ounces of recoverable moisture. Thus a daily ration of 72 ounces of water can be obtained by digging out 5-10 Fockea roots.

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824 But the dilemma of living on Fockea lies in the fact that
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224 depended upon as a staple. Strictly speaking, the Bushmen should therefore be regarded as gatherer-hunters rather than hunter-gatherers.

The relative scarcity of game in the Dobe area may be related to the widespread diminution of the large African mammals during historic times. It is worth noting, however, that this diminution of game has not led to the collapse of the Bushman way of life. It is sometimes asserted that the decline of large game has contributed to the extinction of hunting-and-gathering peoples in Africa and elswhere. The evidence from the Dobe area refutes this assertion. The Bushmen there have elaborate and sophisticated methods for capturing smaller mammals, and the meat from these kills serves to supplement a diet primarily based on abundant plant resources. The burden of the evidence from this study suggests that the Dobe area Bushmen do not lead an impoverished way of life.

● 262 Diet Selectivity -- If the Bushmen were living close to the starvation level, then one would expect them to exploit every available source of nutrition. That their life is well above this level is indicated by the fact that, in a given season, they eat only the most attractive of the vegetable foods, and bypass many other available foods. In their meat eating habits the Bushmen show a similar selectivity. Only a few of the dozens of edible species of small mammals, birds, reptiles, and

262 insects that occur locally are regarded as food. Such animals as rodents, snakes, lizards, termites, and grasshoppers, which, in the literature, are included in the Bushman dietary, are despised by the Bushmen of the Dobe area. Even the more attractive larger mammals are hedged round by numerous age-specific, sex-specific, and personal taboos, so that no single Bushman may eat all of the thirty species of mammal that are considered edible. Ritual curers prescribe, for each individual, a series of species that would be highly injurious if the individual were to eat them. These prohibitions are strictly observed. For instance, the wife of ≠oma, the most successful wart-hog hunter, was forbidden to eat the meat of that species and she became sick to her stomach at the mere smell of cooking wart-hog meat. Such strongly-held aversions and selective tastes are cultural luxuries that are not usually associated with a starvation level subsistence.

Leisure and Work -- The getting of food is the most important 462 [512] single activity in Bushman life. This task occupies, on the average, 25 per cent of the womens' days and 40 per cent of the mens' days. The significant point, however, is that the majority of the time of both sexes is spent in non-subsistence [222] [574] activities such as resting, talking, and visiting. In a typical work period, a Bush woman will gather one day and then spend two or three days either resting in camp or visiting other camps, H B 137 [231] verdure may be found, such as various Acacias, the principal of which are the Kameeldoorn (*Acacia giraffae*) and the Ana (*Acacia albida*). The leaves and pods of the latter provide the staple food for the cattle, sheep and goats in these parts. H B [262] Other characteristic vegetable growths are the inflammable candle bush (*Sarcocaulon Burmanni*) and, in the area inland from Walvis Bay, the famous *!naras* (*Acanthosicyos horrida Welw.*), a leafless cucurbitaceous plant with an edible melon-like fruit which when in season forms practically the sole article of diet of the natives. In one or two spots is found the most remarkable of all, the unique gymnosperm, *Welwitschia mirabilis*, which during a long lifetime produces only two pairs of leaves.

H B 133 At the Olifants River commences another tract of country, characterized by mountains of the folded type, which extend in parallel ranges, separated by wide valleys, over the whole southern portion of the Cape Province as far east as Humansdorp. From the narrow coastal strip fringing this tract the ground rises more or less abruptly to the mountains of the Folded Belt. H B [132 137] To the west the rise is gradual through the fertile Goudini valley of Worcester district; further eastward the vegetation and climate partake more and more of the Karroo character, the Oudtshoorn valley and the many kloofs to the east being generally known as the Southern Karroo. The scenery here rapidly changes to bare uninteresting veld, traversed by deep gullies which are generally dry in the summer. In all directions the landscape is bounded by barren-looking mountains, whose steep, rocky sides appear from a distance to be entirely destitute of vegetation. Nothing can exceed the contrast between the scenery on the opposite slopes of the coast ranges: the traveller from the south, after ascending through luxuriant vegetation, frequently clothed in mist, emerges suddenly into a region of precipices and rocks, where rain may not have fallen for months. The soil in the valleys, however, is fertile when it can be brought under irrigation.

H B 132 The total annual rainfall is by no means deficient, the average for the region being about 29·5 inches, although it varies greatly according to locality. The average for the Cape Peninsula is 40 inches, most of it falling on the eastern side of Table Mountain. Immediately to the east of Cape Town and as far as Knysna there is a decrease to between 15 and 20 inches. The rainfall then becomes more abundant, the well-wooded Knysna itself being one of the best-watered districts of South Africa, with an average rainfall of 40 inches. Further inland, except on the mountain slopes, the rainfall is much less, and the range

H B 136 into Damaraland on the west, and on the east by way of the Transvaal bushveld and Natal to the south coast regions of Knysna and George. From the south it is naturally only sea birds that can be contributed to the fauna; the petrel family forms the characteristic element from this quarter, comprising a number of small petrels and whale birds, the "Cape pigeon" and "Cape hen", shearwaters and several albatrosses. The jackass penguin, breeding in immense numbers on the small islands off the south and west coasts, represents a truly antarctic contribution.

The reptilian fauna is particularly abundant, lizards and snakes especially being very numerous in many parts of the country. Of the latter, the cobra (genus *Naia*), the puffadder (*Bitis arietans*), and the ringhals (*Serpedon haemachates*) are among the more formidable poisonous representatives; the mamba (*Dendrasdis angusticeps*), most deadly of all, is found principally in the eastern parts of the country. The crocodile is extinct in the Cape Province and the Orange Free State, but is still found in the rivers of the eastern lowlands and the Northern Kalahari. The Arachidna are notable for the abundance of scorpions, and among the spiders for the large number of ground-dwelling forms living in burrows, with or without trapdoors, beneath stones, or as free-living hunting forms.

The insect fauna as a whole presents an extraordinarily large number of species, many of them extremely abundant. Locusts are conspicuous among the common plagues of the country, and from time to time issue in devastating swarms from their breeding grounds in the Kalahari and other more or less inaccessible dry regions. Bees, wasps, and ants B [262] are very richly represented; ants' eggs and the honey of wild bees provide the Bushmen with an important element of their diet. H B [164] Mosquitoes and horse-flies are rarely very troublesome except in the moister parts of the country; the anophelene mosquito conveys malaria in the northern parts of South-West Africa and the Kalahari, as well as in the Low Veld of the east, while the tsetse fly (*Glossina*) carries cattle disease (nagana) in the Ngami country and a few localities to the east, but no case of sleeping-sickness has been known to occur. The widely-distributed termites are often destructive, but provide many animals and birds with their chief subsistence. Butterflies and moths, beetles and bugs all appear in numerous varieties, and one B [411] species of beetle, *Cladocera nigro-ornata*, forms the most potent ingredient in the arrow-poison of the Kalahari Bushmen.

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142 arm is the shortest on record. In the Northern tribes measured by
[141] Seiner and Werner the index of span-breadth to stature is just over
100, whereas in Europeans it is about 103 and in the Central African
Pygmies as much as 106. The hands and feet are very small and narrow
in proportion, the fingers and toes short and stumpy.

The outline of the body is sunken and angular, and all projections
are strongly marked. The shoulders are angular, and the shoulder-blades
and collar-bones stand out very strongly, owing to the thinness
of the muscles and the lack of adipose tissue in the skin. The chest
as a rule is fairly well developed, though its appearance is sometimes
vitiated by the variable conditions of the abdomen, and especially
by the frequent occurrence of a pendulous belly, chiefly in young
● [262] people, as the result of unfavourable diet, unrestricted gorging, and
the frequent alternation between starvation and plenty. Where the
food supply is at all regular, this abnormal protuberance is rarely seen.
The buttocks are small but often seem prominent owing to the curious
inward curvature of the spine in the lumbo-sacral region. The penis,
[147] even when not in a state of erection, often extends horizontally in a
semi-erect condition. This remarkable feature, portrayed also in
many of the Bushman paintings of human beings, has been regarded
by some recent writers, such as von Luschan and Seiner, as a special
racial characteristic of the Bushmen.

The Northern Bushmen do not differ very markedly in build from
their Southern relatives, although the "Bastard" tribes are on the
whole better developed physically. They have stronger limbs, with
arms and legs slightly longer in proportion; the shoulders are more
rounded, and the chest seen to better advantage. The protuberant
abdomen and the marked hollow of the back due to the lumbo-sacral
curvature are present in most individuals. The hands and feet are
[147 slightly bigger, the fingers and toes longer. The horizontal projection
of the penis was noted by Seiner in about three-fifths of the men he
144] examined. He states that with admixture of Bantu blood it begins
to droop, so that there does appear to be some racial significance
attached to this feature. Its occurrence has not yet been physiologically
explained, although Seiner suggests that it may be due to a strong
development of the *Ligamentum suspensorium penis*.

142 The female body, like that of the male, is generally slender, the
147 limbs slight, the hands and feet small. In mature women, however,
there is often found a strong accumulation of fat on the thighs and
especially on the buttocks, a character known as steatopygia, which

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exchanged from hut to hut, the women going to one hut, the men to 572
another, and so on. Only the owners sit in a hut, while the visitors [574]
gather round the fire outside. The little children play about everywhere, the bigger boys and girls by themselves. There is no fixed time for going to sleep. As a rule the people turn in to bed fairly early, but if it is a fine evening dancing may be started and kept up [535]
till late, everybody taking part except the old people and the little children.[1]

Food and Fire

The Bushmen will eat almost anything that can be eaten. Of 262
animal foods the favourite is game of all kinds, when it can be obtained, and they are also very fond of hare, spring hare, guinea fowl, korhaan, partridge, ostrich, and other birds, as well as birds' eggs. Fish too are eaten wherever they can be caught, and among the Bushmen of the Okavango swamps are a staple article of diet. Anteaters, ant bears, tortoises, porcupines, bull frogs, snakes, and lizards are greatly relished, while among insects locusts, scorpions, beetles, young bees and honey, termites, flying ants and ants' eggs are also eaten. In fact all kinds of living animals are made use of as food, with the almost universal exception of the baboon and the hyena—the former [825]
"on account of its being so like a man", the latter "because it eats human corpses".

The most important vegetable foods in the Southern and Central Kalahari are the *tsama* (*Citrullus vulgaris*), "uintjies" (*Cyperus* [824]
edulis Dtr.), *Grewia* berries, and the *//noun* (*Bauhinea esculenta*); in the Namib the *!naras* fruit (*Acanthosicyos horrida Welw.*) forms almost the sole article of diet when in season; while as one proceeds northwards various fruit-bearing trees appear, such as the wild fig, palm, omungete nut, wild orange, omuande, and omuve. In addition numerous other varieties of edible roots, berries, cucumbers, tubers, melons, and ground nuts appear in great profusion during and after the rainy season, when they form the principal part of the daily menu.[2]

Much of the food is eaten raw, but the Bushmen know how to 252
prepare and cook it. Each family prepares its own food. Cooking [592]

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[1] Passarge, op. cit., 44 sqq.; D. F. Bleek, *The Naron*, 32; Fourie, "The Bushmen of S.W. Africa," 88.

[2] Stow, *Native Races of S. Africa*, 54 sqq.; von François, *Nama und Damara*, 234-5; Schultze, *Aus Namaland und Kalahari*, 659 sqq.; Passarge, op. cit., 44 sqq.; Kaufmann, "Die Auin," 139-40, 144 sqq.; Werner, "Ueber die Heikum- und Kungbuschleute," 253-5; Dornan, *Pygmies and Bushmen*, 114 sqq.; D. F. Bleek, op. cit., 6-7; Fourie, op. cit., 98 sq.

lighting a new fire at the next encampment, although this is a practice 372
which, as we have just seen, Fourie explicitly denies for the Heikum. 622

There is no indication at all in the available literature that similar [114]
usages relating to fire are found among the rest of the Bushmen, nor [184]
is there any further evidence of their occurrence among the tribes
mentioned above. On the other hand the sacred fire also plays a 171
very conspicuous part in the social and ritual life of the OvaHerero, 372
OvaMbo, and Bergdama, all of them close neighbours of the Bushmen
tribes among whom it is found, and with the last two of whom the
Heikum at least have intermixed considerably. It is probable therefore
that the special observances relating to fire among the Heikum and the [177]
Kung may represent borrowed elements of culture; but much
fuller information is needed about them before this can be definitely
asserted. Whatever their origin, however, these usages now obviously
play an important part in the social life of the people. In particular,
the fact that at the present time the chief of the band has certain ex- [622]
clusive functions in connection with fire is of outstanding significance
in the whole sphere of public life, and one which cannot be dismissed
merely because it may be due to the effects of contact with other
peoples. To this point we shall have to return when discussing
the political institutions of the Bushmen.

Special Usages relating to Food

There is not much information available about food taboos, but 262 ●
it appears that, in some of the tribes at least, certain foods are forbidden 825
to persons at different stages of life. In the texts obtained by Dr. Bleek
and Miss Lloyd from the Cape Bushmen there are preserved the details
of some of the food taboos prevalent among this people. Thus little
children were not allowed to eat the heart of the jackal (on account
of this animal's great timidity), certain portions of the ostrich, or the
tip of the springbok's tail; a menstruating girl might not eat game [841]
killed by the young men, lest she bring them ill luck—she had to
eat only game taken by her father; a certain kind of tortoise was
forbidden to young unmarried men and women, for fear of arousing [821]
the wrath of the rain; women were not allowed to eat the flesh of
the lynx; the tail of the porcupine was forbidden to certain
(unspecified) persons; while all refrained from eating a certain small 262
portion of the flesh of the hare.[1] The published information relating [114]

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[1] L. C. Lloyd, *Further Bushman Material Collected*, 23; Bleek and Lloyd, *Bushman Folklore*, cf. references in Index, s.v. "Food—not to be eaten."

262 to these taboos is unfortunately so fragmentary that little can be
[114] gathered of the ideas underlying them. Several of them are
undoubtedly connected with wider ritual observances, e.g. the taboo
[821] imposed on menstruating girls, and again that associated with a
[821] certain belief about the rain; but of the others no full explanation is
[773] available, although the taboo on the portion of the hare may possibly
[761] be linked up with the Bushman myth of the origin of death, in which
the hare plays the part of the fateful messenger who distorts the
[825] promise of immortality sent to mankind by the moon.

Among the Naron, again, "It does not seem," says Miss Bleek,[1] "as if many taboos in the food line still existed. Paauw meat and ostrich eggs are chiefly given to old men as the greatest delicacies. Some say young children, or girls till they have had their first baby, are not to eat steenbok, lest they remain small, but others tell me that all meat is eaten by everyone. Honey touched by a baboon must not be eaten, or you will die." Among the Auen, young girls and boys apparently may not eat game at all, otherwise they will remain thin; while water
[841] and food collected by a menstruating woman may be partaken of only
by herself and old people—it "makes others weak".[2]

About the Heikum we have far more information on this point,
224 thanks to the excellent description given by Fourie of certain
[114] of their hunting observances.[3] The details he gives throw such a
wealth of new light upon this aspect of Bushman life that they may be quoted in full. "After an animal has been shot it is followed by the hunter until it expires or until nightfall when he returns to the *//gaus* (camp). The following morning the whole community takes part in the search for the carcass, as the previous day's tracks had in all probability been effaced during the night by other animals.
224 The searchers spread out on a wide front and keep a very sharp lookout
252 for the presence of vultures. After the carcass has been found it is
[462] skinned by the men. The belly is then opened and the entrails removed
and cleaned. Bags are made from the stomach and into these the blood is collected. The animal is next cut up and, after this has been done, the liver is roasted and eaten by the men. The skin, if suitable for the
[281] purpose, is cut into sandals, bowstrings, etc., on the spot. The meat is
then removed to the *//gaus* by the men who may occasionally be
[462] assisted by the women. On arrival at the *//gaus* all the meat is laid

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[1] *The Naron*, 7.

[2] Kaufmann, "Die Auin," 140, 157.

[3] "The Bushmen of S.W. Africa," 100–2; cf. *idem*, "Customs of the Hei-//om Bushmen," 54–6.

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on the ground under the */heis* either on sticks which were used in 224
carrying it or on branches. The *gei-khoib* (chief) now comes forward 252
and if he finds that the */hei-/ais* (fire under the tree) has gone out he 224
returns to his hut, brings fire and wood and re-lights it. If he is 252
absent when the meat is brought in he is immediately sent for, the 622
meat in the meantime being hung on the *!heis* (tree in centre of camp).
After having kindled the fire the *gei-khoib* instructs one of the men— [372]
the one who has shot the animal is excluded from doing any work—to
open the bones and collect the marrow. The blood and the marrow
are placed on the fire in separate pots and at the same time some of
the meat for the men is also cooked. As soon as the latter is ready for
eating the *gei-khoib* removes a piece from the pot and 'tastes'
(*tsa-tsa*) it. This is done by holding it between the teeth and fingers [264]
and cutting off and eating a morsel or two. The meat is now safe
for the members of his group to eat. The cooked meat is then pounded
with a stone, teased between the fingers and thrown into the pot
containing the blood. The melted marrow is next stirred into the
mixture of blood and meat. The resulting dish is known as *ǂkoms*.

" All meat killed with bow and arrow is *soxa* [taboo] and may not be 224
partaken of until it has been tasted by the *gei-khoib*. The liver, how- 262
ever, is eaten by the men immediately after the animal has been cut [622]
up and is thus excluded from the scope of the *soxa* as far as men are
concerned, but to the women it is *soxa*. All parts of the animal are
eaten, but certain categories of people may eat only certain prescribed
portions of the animal, the rest of the meat being *soxa* to them. For
example, the wife of the man who killed the animal is entitled to the
superficial covering of meat and fat of the hind quarters, the entrails
and the trotters (*ǂei-ti*). Her portion is known as the *ǂnoe-di* and is the
only meat which may be partaken of by women. The *ǂnoe-di* is shared
by her with the other women, including the *ǂkham-khoidi* (adolescent
girls) and with the young children. The *ǂnoe-di*, however, may not [622]
be eaten until the *gei-khoib* has tasted the meat. It is cut on the spot
where the carcass was found by the person who shot the animal and
handed over to the latter's wife after arrival at the *//gaus*. It is not
brought under the */heis*. It is cooked by the wife of the hunter on the [252]
fire in front of her hut after which the other women come and get
their portions and eat it in their own huts. The *ǂkham-khoidi*
obtain their meat from their respective mothers, as also do young
children still living with their parents. If women partake of any other
meat than the *ǂnoe-di*, the poison of the arrow will not act when an

224 animal has been shot. The meat which may be eaten by the *axarogu*
262 (youths) is known as */om-//gani*, and includes the flesh of the abdominal
wall, kidneys, etc., and the genital organs such as udder, testicles,
224 etc. It is prepared by the *axarogu* themselves over their own fire at
252 the *axarogudi ǂgaos* (young men's hut). The person who shot the
262 animal receives the ribs and shoulder blade of one side. He may prepare
his portion either under the */heis* or over his own fire. The ribs must
be cooked and the shoulder blade roasted because they taste better
when done in this manner. The rest of the meat is *soxa* to him, and
if he eats any other part, e.g. the *ǂkoms*, he will not meet with success
in hunting because the poison will weaken and refuse to act. The parts
of the animal which go to the *gei-khoib* are known as the *so-eis* and
include portions of about two finger-breadths in size from each
quarter, from each side of the back and one rib from each side. These
are strung on a thong or cord and hung up for his sole use. *So-eis*
[574] may, however, be shared by him with a visiting *gei-khoib*. The
gei-khois receives her share from the *ǂnoe-di*. The *gei-khoib* may also
partake of the meat for the remainder of the men called the *so-//gani*,
[264] under which is included the *ǂkoms*. The latter may be eaten only under
the *!heis*. After it has been prepared each man brings his wooden bowl
or other receptacle and helps himself. Any man whose wife is
[841] menstruating will, however, not partake of the *ǂkoms* as it contains
blood. The rest of the meat is divided among the men by the *gei-khoib*,
and is prepared and eaten at their huts.

"A similar procedure is adopted in connection with meat killed by
224 the members of an outlying *//gaus*, the *gei-khoib* likewise having to
262 taste it before it may be partaken of. He may either proceed to the
622 *//gaus* concerned, or if the distance to be travelled is considerable,
all the meat will be brought to his *//gaus*. In all such cases the *so-eis*
is brought to him by the messenger sent to notify him of the kill.
[372] When he visits a *//gaus* for this purpose he kindles the */hei-/ais* with
fire from one of the huts, and, after having tasted the meat, returns
to his own."

114 Apart from the light it throws upon certain functions of the chief,
224 this account illustrates admirably both the existence of special ritual
[622] observances in regard to game killed in the chase, and the fact that
food obtained in this way is shared among all the people present at
the encampment. This latter feature has also been noted by other
writers on the different Bushman tribes,[1] and it can safely be asserted

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[1] Passarge, op. cit., 55; Kaufmann, op. cit., 155–6 D. F. Bleek, *The Mantis*, pp. viii–ix; *idem*, *The Naron*, 16.

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that among the Bushmen all game is shared out among the members of 114
the band. To what extent the same elaborate rules of division exist 224
in the other tribes is difficult to determine. The only other indication
of similar practices is found in the texts obtained by Bleek and
Miss Lloyd from the Cape Bushmen. Only a selection of these have so
far been published, and the information contained in them is rather
fragmentary. But it appears that women, for example, were not [262]
permitted to eat the meat of the shoulder blades, lest the men
subsequently prove unsuccessful in hunting; that the man who shot
the animal might not take part in cutting it up; and the bones which
were left over had to be carefully put aside in certain special ways.[1]
Obviously such usages hint at an elaborate procedure in regard to the
cutting up, distribution, and treatment of the meat; and one can only
regret that all the details relating to them have not yet been made
available.

Narcotics

As narcotics the Bushmen use chiefly tobacco and dagga 276
(*Cannabis sativa*), the latter a herb with marked intoxicating effects.
All grown-up people, and even small children, smoke tobacco
when they can get it. They do not cultivate it themselves, although [249]
a few men among the Auen and the Naron are said to have made
slight efforts to grow tobacco and dagga after the manner of their [177]
Bantu and Bergdama neighbours.[2] Almost all the tobacco used by the [439]
Bushmen is imported through trade or obtained by service with
other peoples, and they are always extremely keen to acquire it.

In the north-west their pipes (Plate XI) are generally tubes of [324]
serpentine, some 3 inches long and rather wider at one end than at
the other, which are cut and hollowed out with the iron spear point
or with a knife, or even with a small stone drill. The hollow shin [237]
bones of small buck are also sometimes used, but nowadays the most [177]
prevalent form of pipe is an empty cartridge-case! Pipes consisting
of an antelope horn were largely used by the Cape Bushmen. Near [321]
the point of the horn was made a hole, into which was inserted a reed
tube, and on top of this was fitted an elongated clay bowl to hold
the tobacco. When these pipes were used, some water was put into
the horn, the mouth applied to the large orifice of the horn, and the

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[1] Lloyd, *Further Bushman Material Collected*, 15; Bleek and Lloyd, *Bushman Folklore*, 271 sqq.

[2] D. F. Bleek, *The Naron*, 18; Kaufmann, op. cit., 148–9.

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big game, especially wild horses and mules. There are in [224]
those parts wild horses and mules, both so beautifully bred
out by nature that no painter is skilful enough to paint 136
them true to life with all their colouring. The horses have buttocks extraordinarily dappled, and over the rest of the body are striped yellow, black, red and pure sky blue. The mules are also striped, white and chestnut brown, but not
dappled, and are uncommonly beautiful.[39]) The Sonquas in 439
1662 brought the skin of one of these beasts to the Cape, which our countrymen bartered from them for tobacco and other things. It was then filled with straw and hung up for show in the hall of the Fort, as something curious and uncommon, which it also is, to be seen by the people of the incoming ships.[40])

The meat of the rock-rabbits constitutes a pleasant food 262
for the Sonquas, who live principally on it and on certain
roots growing in the ground. They also keep many hunting 231
dogs,[40a]) trained to hunt the rock-rabbits which are their 224
principal food, and knowing how to drag these animals out of their holes.

They are extremely great plunderers and marauders. 721
They steal from other Hottentots all the cattle they can get, with which they then flee immediately to the mountains, where they cannot be found in their retreats and hidden caves by anybody, not even by other Hottentots.

Their huts, made only of branches twined together, 342
without woven mats, and covered solely with rushes, are 361
several thousand in number; for they move about from one place to another, and never break up the huts, but erect still others wherever they camp.

Their little cloaks are sewn together from the skins of 291
the wild oxen which live on the rocks. The women have a *quitazol* or sunshade of ostrich feathers, tied on and about the head, to protect themselves from the heat and burning of the sun's piercing rays.

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had shot a wild horse below the mane in the neck. This horse was 136
very beautifully gray dappled over its whole body, except behind from the back over the buttocks and along the legs which were flame-coloured, with white, sky blue and reddish brown stripes, wonderfully beautiful . . . It had small ears like a horse. The stuffed heads and pieces of skin which the Hottentots sometimes brought to us belong evidently to another sort, as they have long ears, though extraordinarily, curiously and beautifully flame-coloured in white and chestnut brown."

[40a]) Dogs were the only domestic animals kept by the Bushmen. 231
They were generally lean, hungry-looking mongrels, half starved
and savage tempered, but excellent assistants in the chase, for 224
which they were mainly employed.